

# A11 (ISO2) Eksenel Pistonlu Pompa

## ISO2 Mounting Flange High Pressure Bent Axis Pump

High Pressure Hydraulic Bent Axis Piston Pumps, High Pressure, 400/450 BAR Working Pressure. High Rotational Speed, High Efficiency, Slim Design, Cast Iron Pump Body, Re-Designed in 2025.

### Designation;

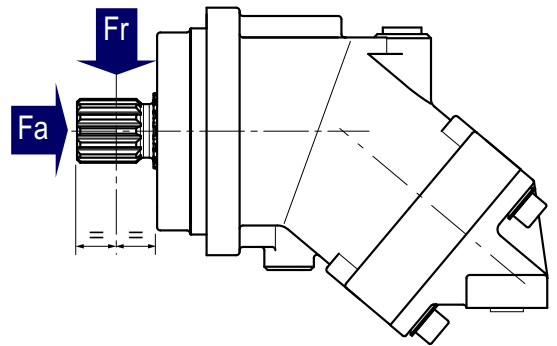
5cc, 10cc, 12cc, 18cc, 25cc, 32cc, 41cc, 50cc,  
56cc, 63cc,



[www.hydrogold.com.tr](http://www.hydrogold.com.tr)

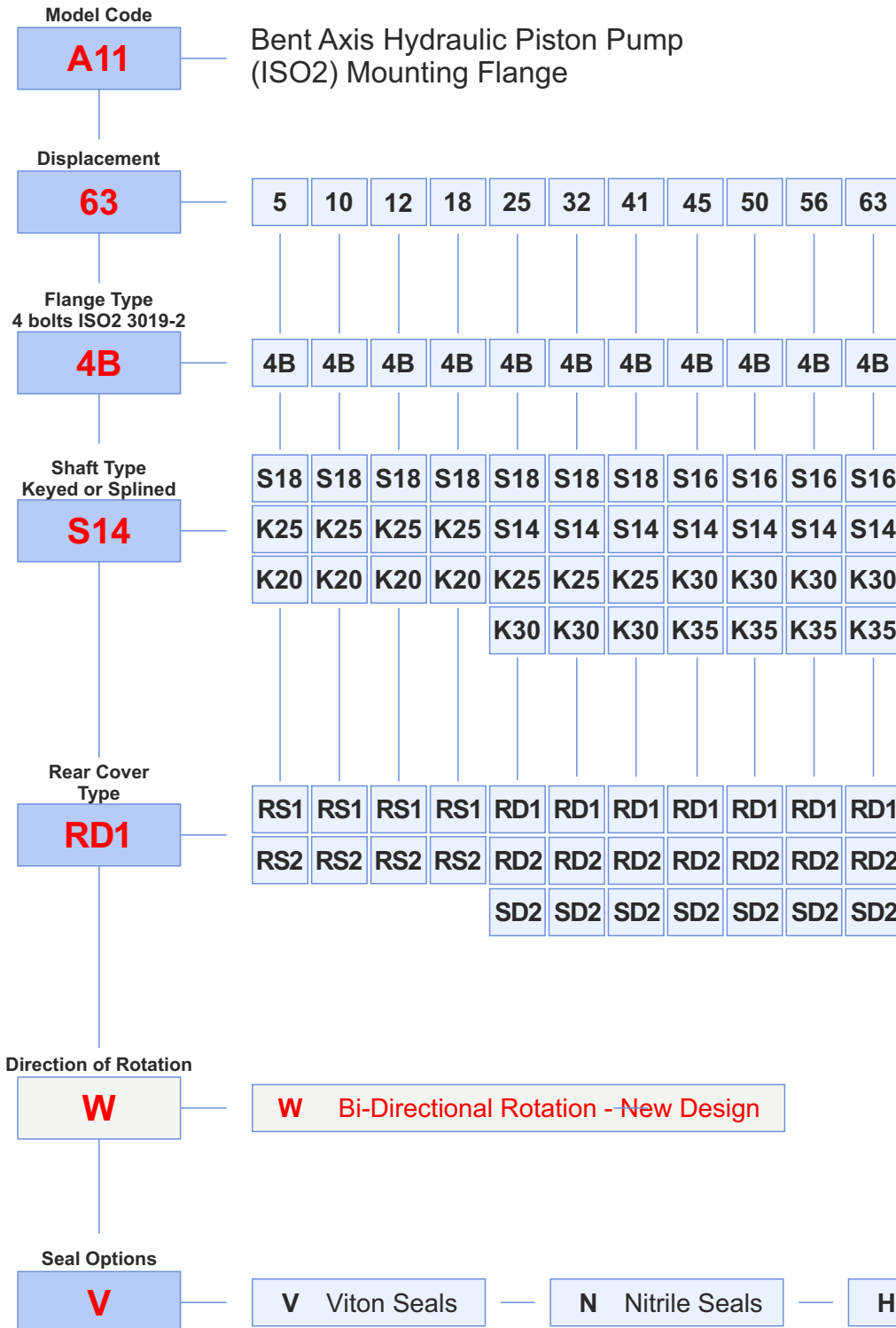
## Characteristics of the A11 - ISO2 Flange Bent Axis Pumps

| Pump MODEL | DISPL. (cc) | CONTINUOUS MAX. SPEED (rpm) | INTERMITTENT MAX. SPEED (rpm) | MAX. FLOW ABSORBED (l/mn) | TORQUE BAR (m.N/bar) | TORQUE AT 350 BAR (m.N) | THEORETICAL MAX. POWER AT 400 BAR (HP / kW) | MAX. ALLOW PRESSURE CONTN./PEAK (bar) | WEIGHT (kg) |
|------------|-------------|-----------------------------|-------------------------------|---------------------------|----------------------|-------------------------|---|---------------------------------------|-------------|
| 5 cc       | 5.1         | 8800                        | 9600                          | 45                        | 0.09                 | 46                      | 64.1 / 48.2                                 | 400 / 450                             | 5.2         |
| 10 cc      | 10.2        | 8600                        | 9400                          | 88                        | 0.14                 | 58                      | 72.9 / 54.4                                 | 400 / 450                             | 5.5         |
| 12 cc      | 12.0        | 8000                        | 8800                          | 96                        | 0.19                 | 67                      | 85.5 / 64.4                                 | 400 / 450                             | 5.5         |
| 18 cc      | 18.0        | 8000                        | 8800                          | 144                       | 0.28                 | 99                      | 128.5 / 95.9                                | 400 / 450                             | 5.5         |
| 25 cc      | 25.0        | 6300                        | 6900                          | 158                       | 0.40                 | 139                     | 140.0 / 104.4                               | 400 / 450                             | 11.4        |
| 32 cc      | 32.0        | 6300                        | 6900                          | 202                       | 0.50                 | 178                     | 180.5 / 134.4                               | 400 / 450                             | 11.5        |
| 41 cc      | 41.0        | 5600                        | 6200                          | 230                       | 0.65                 | 228                     | 205.2 / 153.1                               | 400 / 450                             | 11.6        |
| 45 cc      | 45.0        | 5600                        | 6200                          | 252                       | 0.72                 | 253                     | 202.4 / 151.8                               | 400 / 450                             | 17.9        |
| 50 cc      | 50,3        | 5000                        | 5500                          | 252                       | 0.80                 | 280                     | 224.1 / 167.5                               | 400 / 450                             | 18.1        |
| 56 cc      | 56,0        | 5000                        | 5500                          | 280                       | 0.90                 | 320                     | 244.5 / 187.1                               | 400 / 450                             | 18.1        |
| 63 cc      | 63.0        | 5000                        | 5500                          | 315                       | 1.00                 | 351                     | 281.6 / 209.1                               | 400 / 450                             | 18.2        |



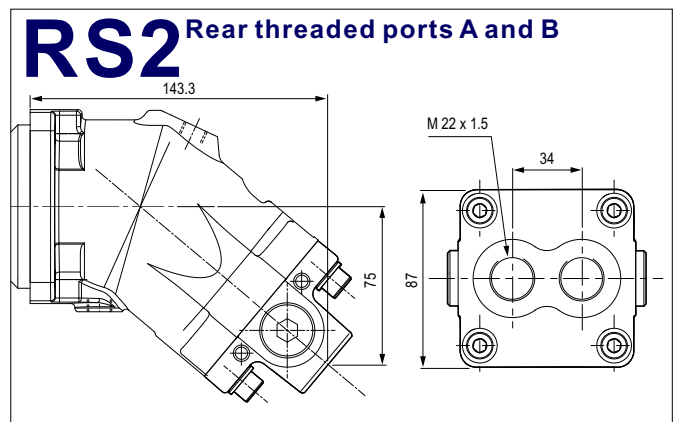
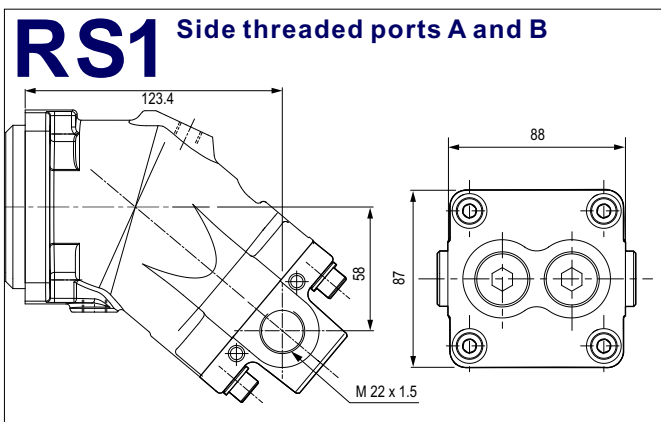
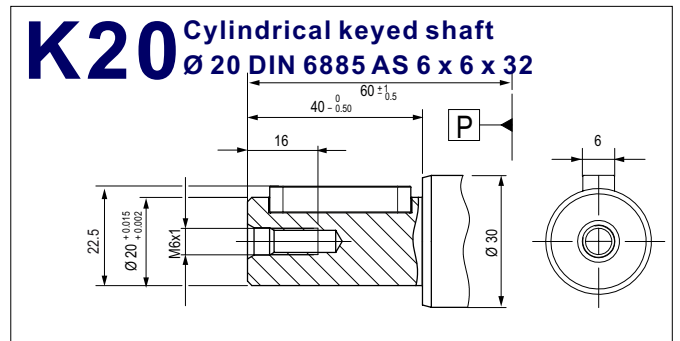
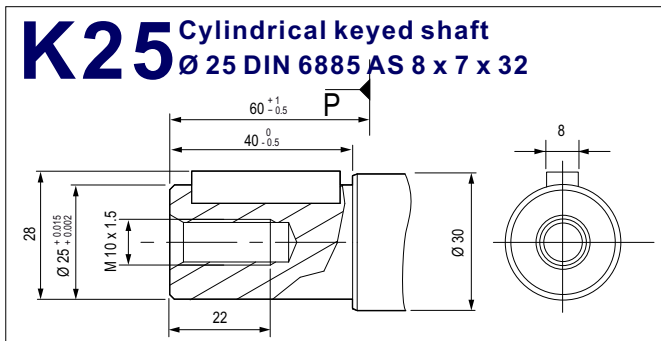
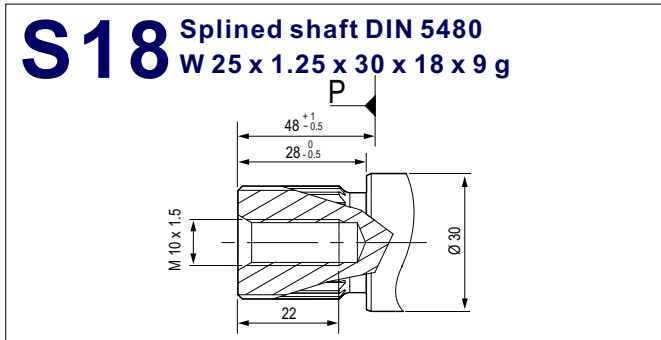
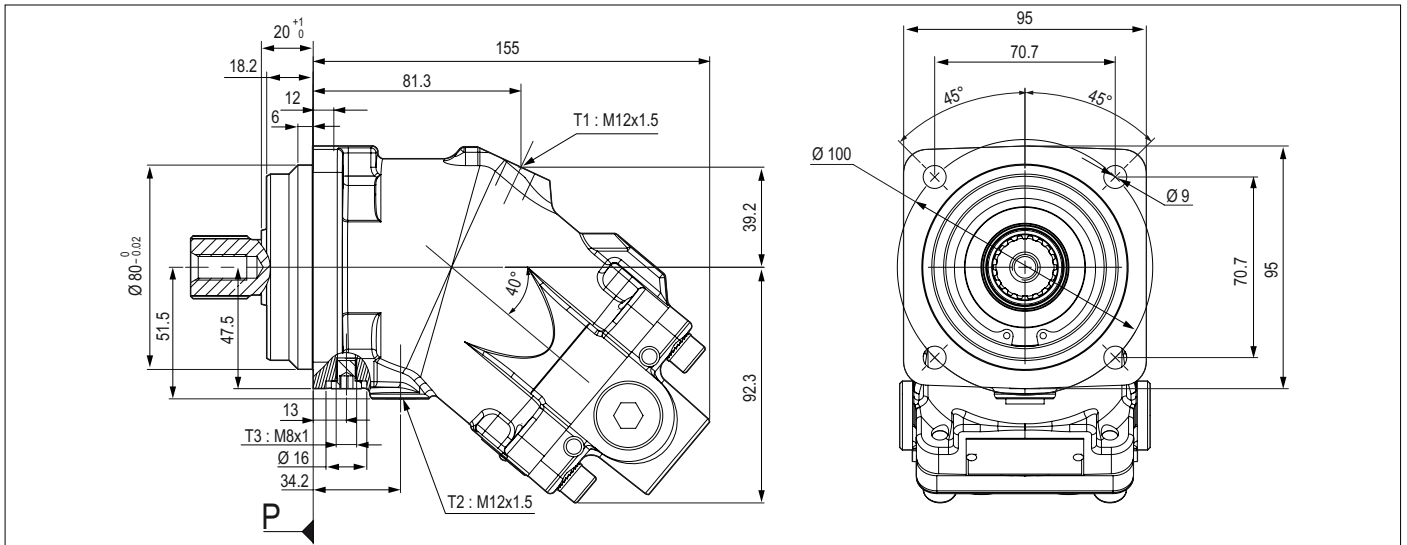
| Pump model  | 5, 10, 12 | 18 cc | 25 cc | 32 cc  | 41. 45 | 50 cc | 56, 63cc |
|-------------|-----------|-------|-------|--------|--------|-------|----------|
| Fr ( lbf )  | 630       | 900   | 1350  | 1462.5 | 1462.5 | 1686  | 2023     |
| Fr ( N/bar) | 2800      | 4000  | 6000  | 6500   | 6500   | 7500  | 9000     |
| Fa ( lbf )  | 0.23      | 0.31  | 0.42  | 0.46   | 0.62   | 0.62  | 0.77     |
| Fa ( N/bar) | (15)      | (20)  | (27)  | (30)   | (40)   | (40)  | (50)     |

## Ordering Code; A11 - ISO2 Flange Bent Axis Pumps



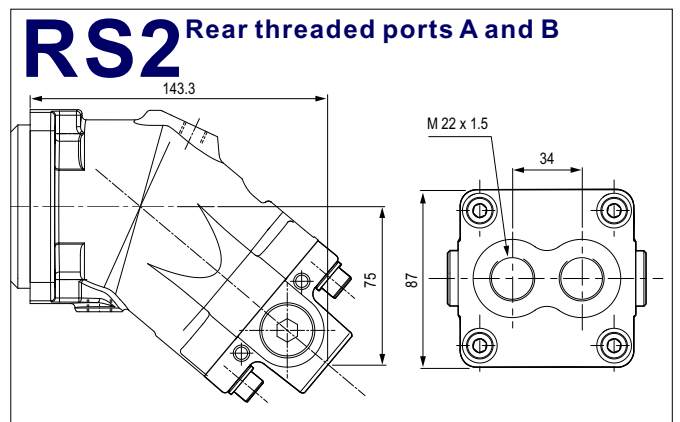
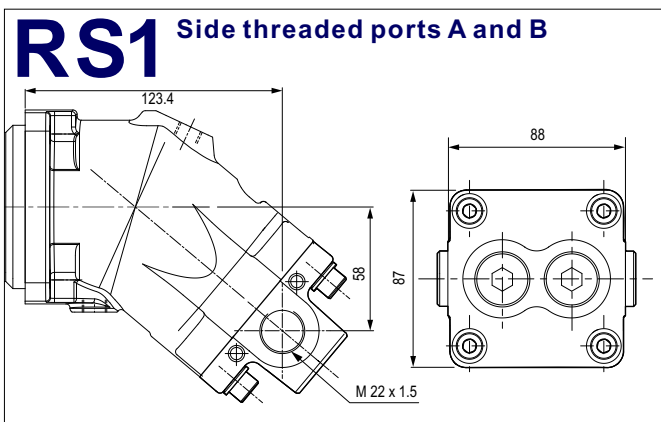
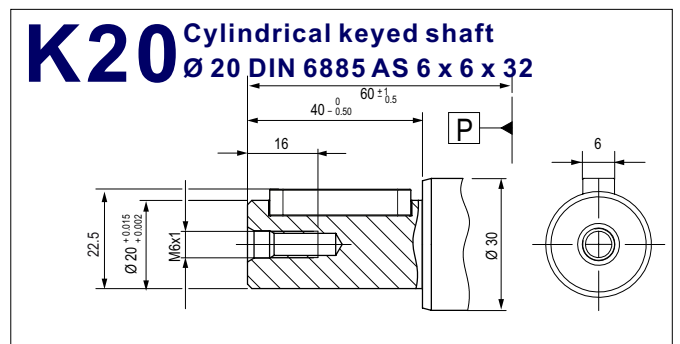
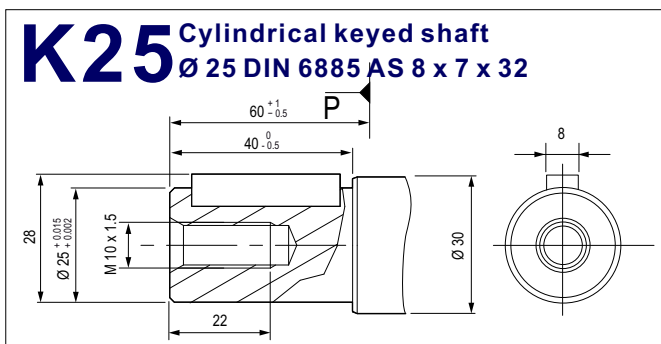
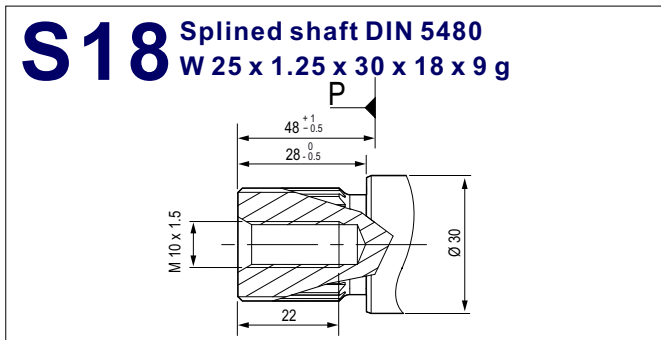
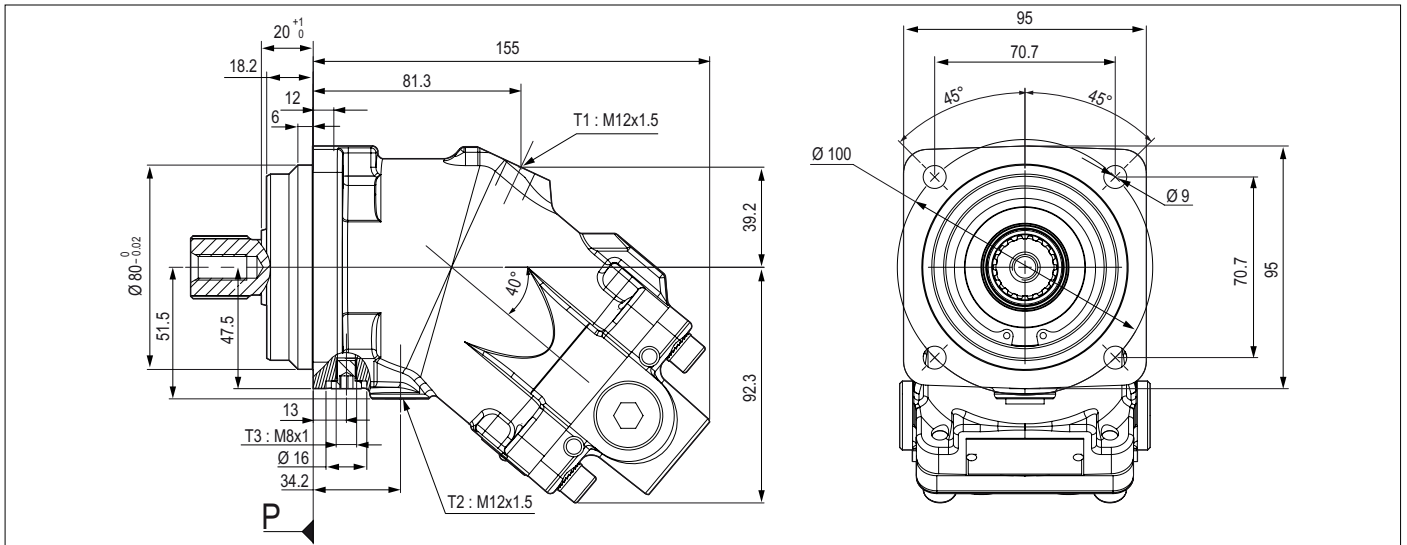


# A11 - 10 cc (ISO2) Bent Axis Pump

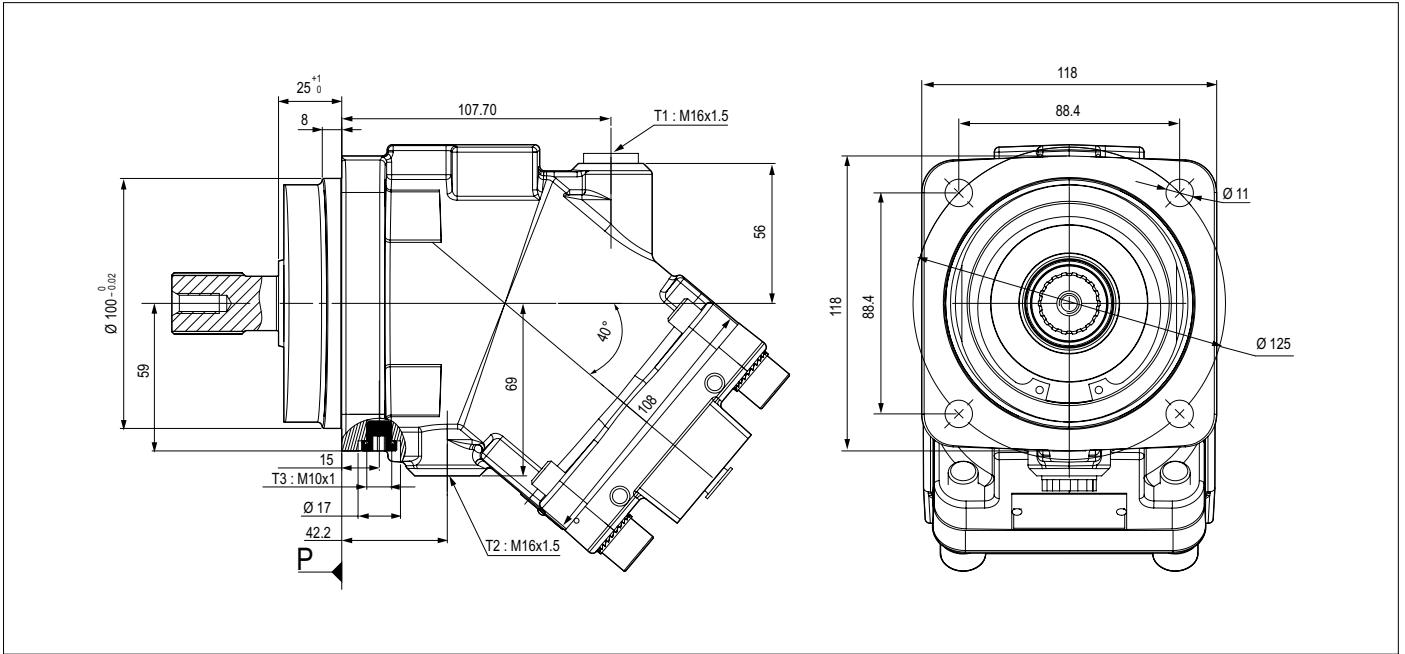




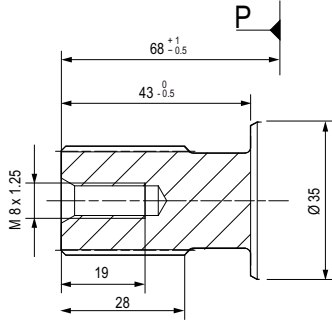
# A11 - 18 cc (ISO2) Bent Axis Pump



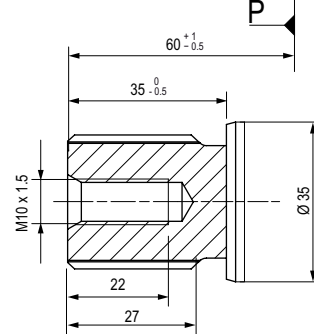
# A11 - 25 cc (ISO2) Bent Axis Pump



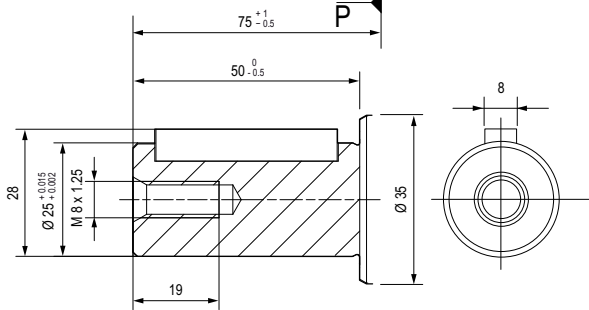
## S18 Splined shaft DIN 5480 W 25 x 1.25 x 30 x 18 x 9 g



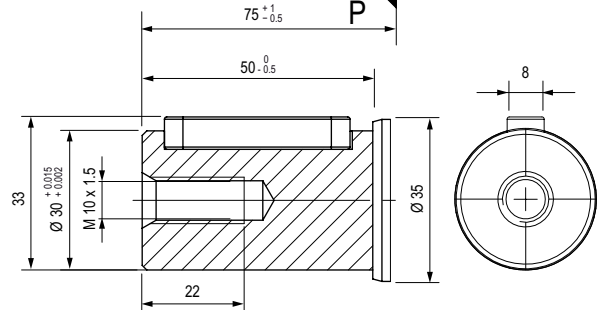
## S14 Splined shaft DIN 5480 W 30 x 2 x 30 x 14 x 9 g



## K25 Cylindrical keyed shaft $\varnothing 25$ DIN 6885 AS 8 x 7 x 40



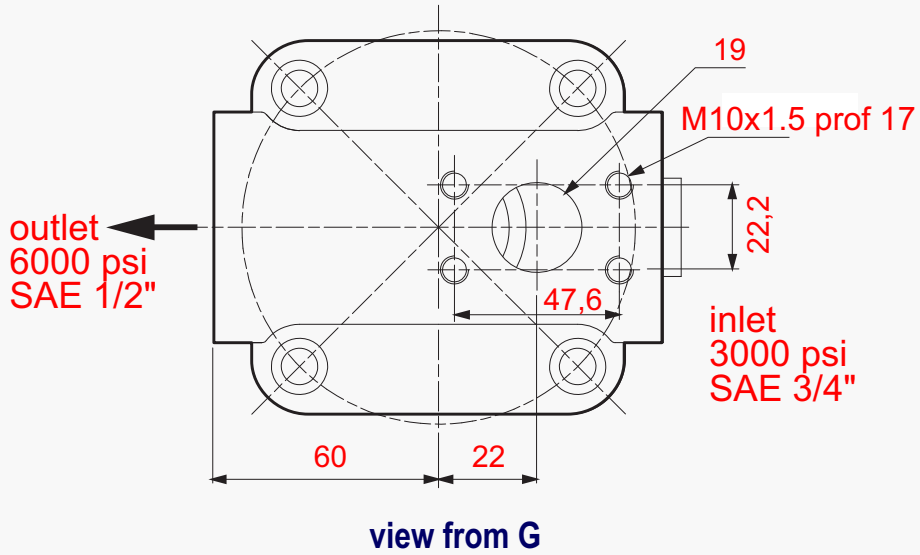
## K30 Cylindrical keyed shaft $\varnothing 30$ DIN 6885 AS 8 x 7 x 40



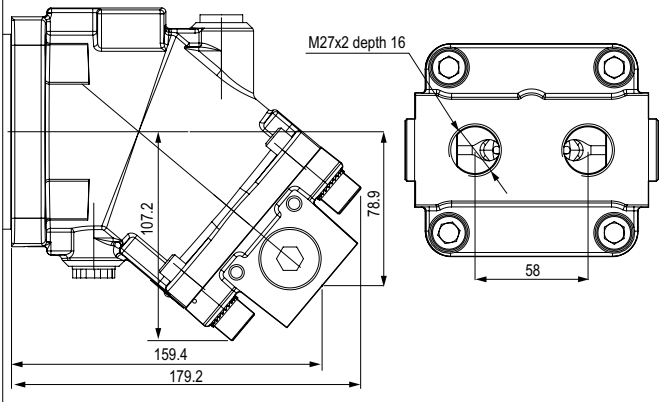


# A11 - 25 cc (ISO2) Bent Axis Pump

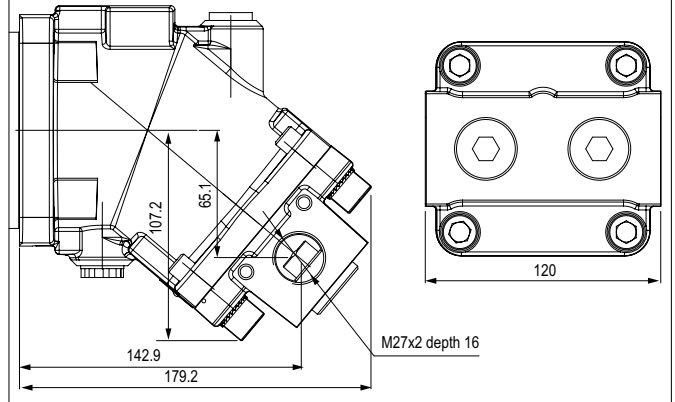
**SLR**



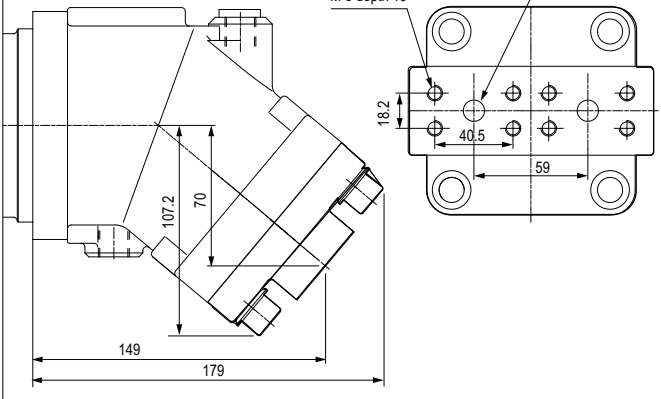
**RD2** Rear threaded ports A and B



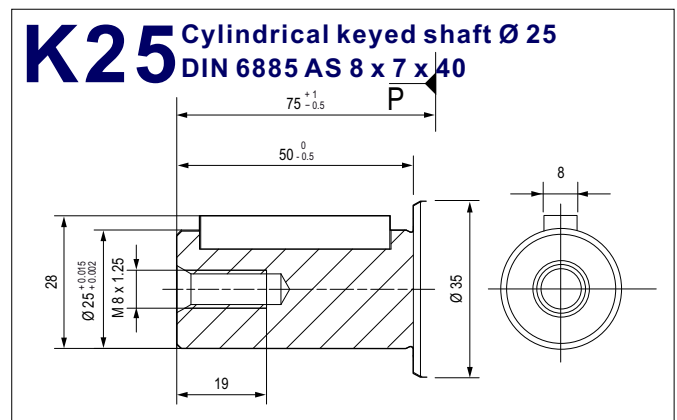
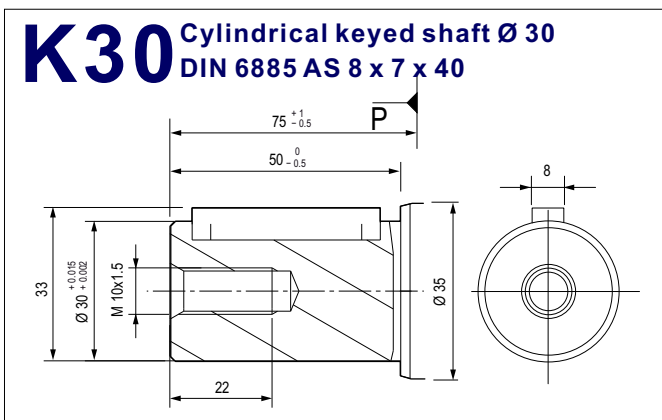
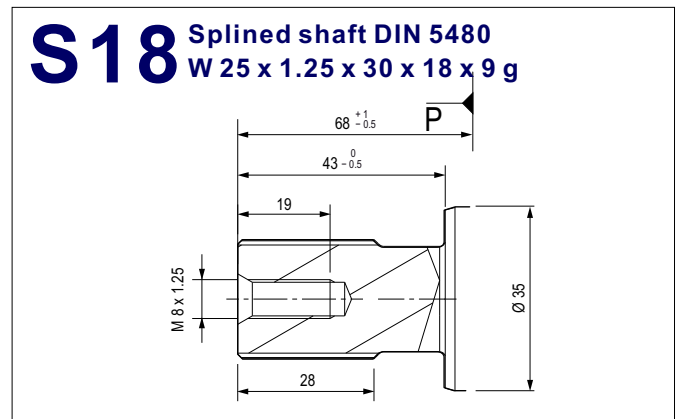
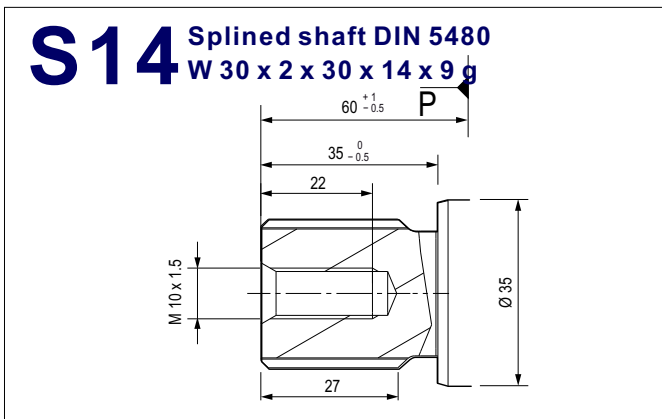
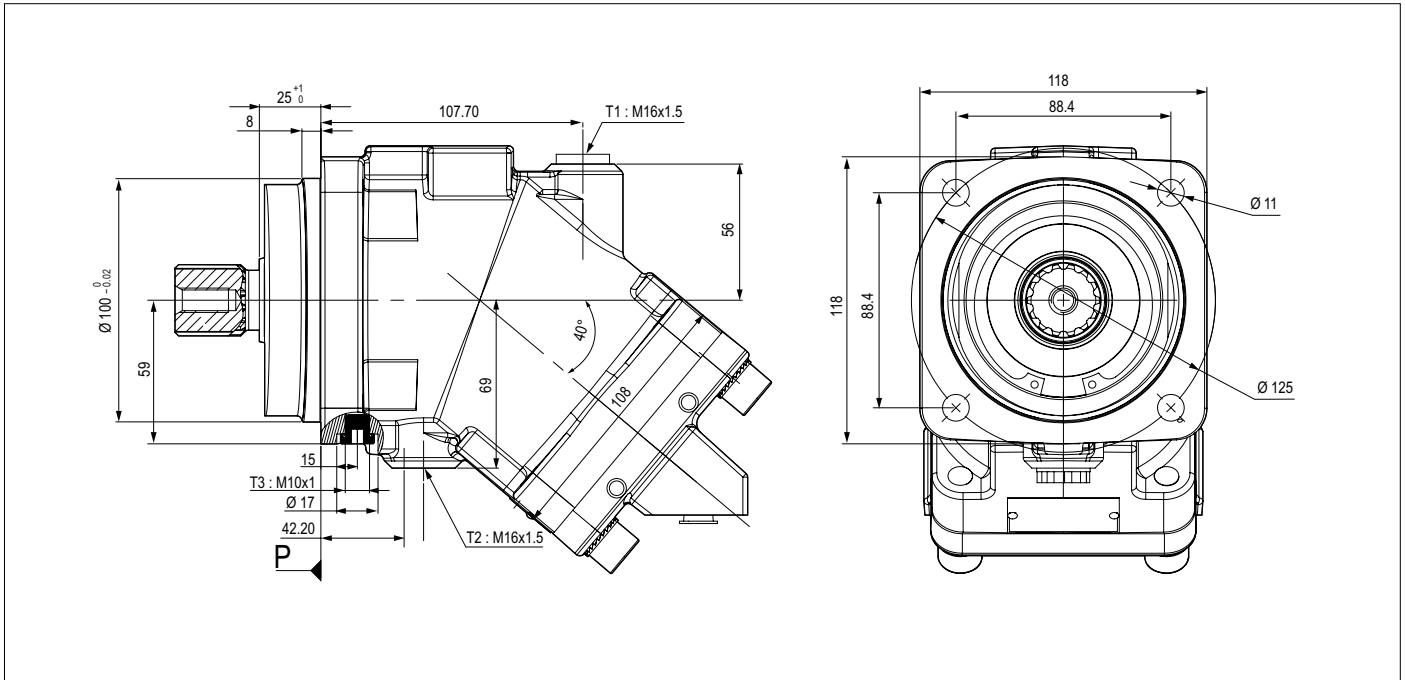
**SD2** Side threaded ports A and B



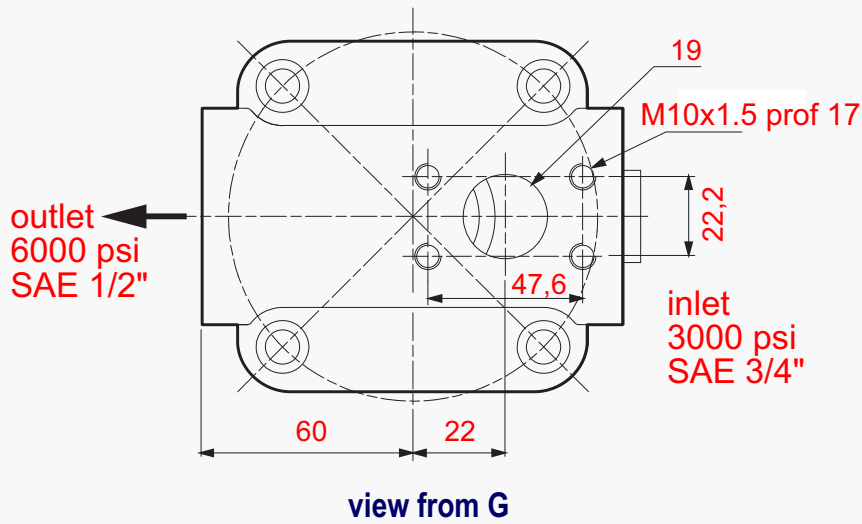
**RD1** Rear flange ports A and B SAE 1/2" 6000 psi



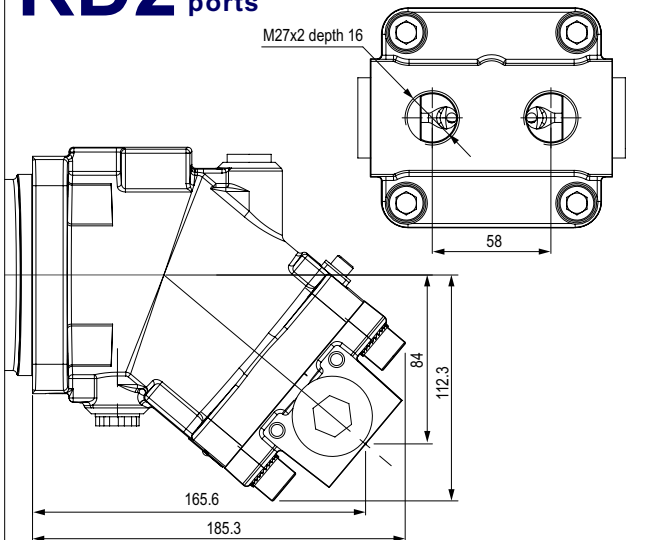
# A11 - 32 cc (ISO2) Bent Axis Pump



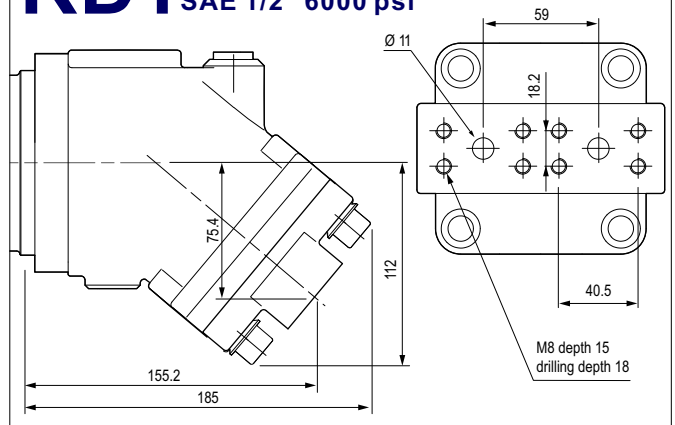
## SLR



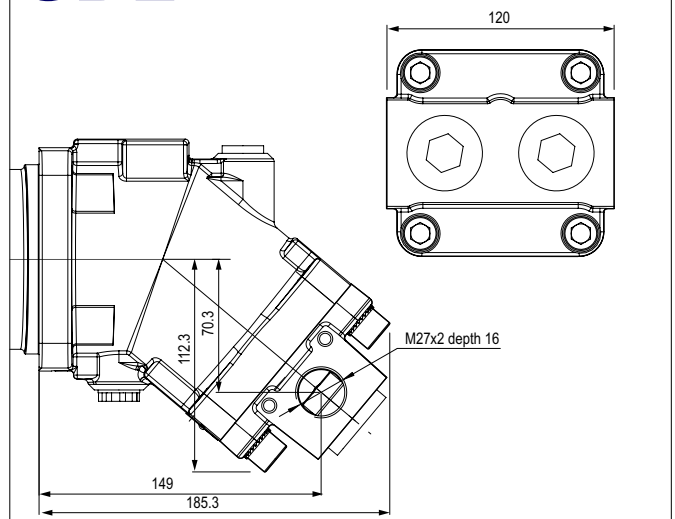
## RD2 Rear threaded ports



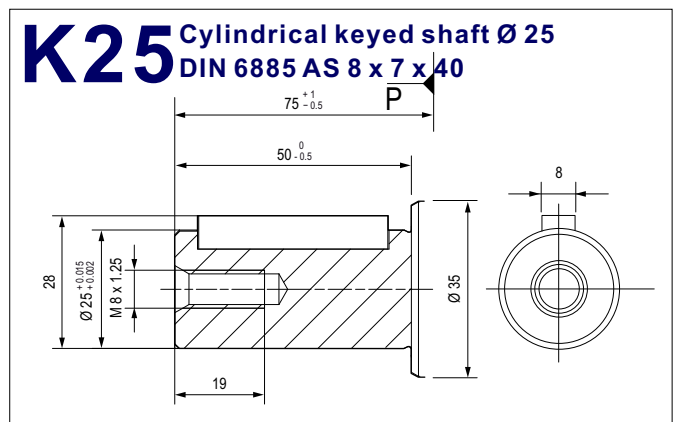
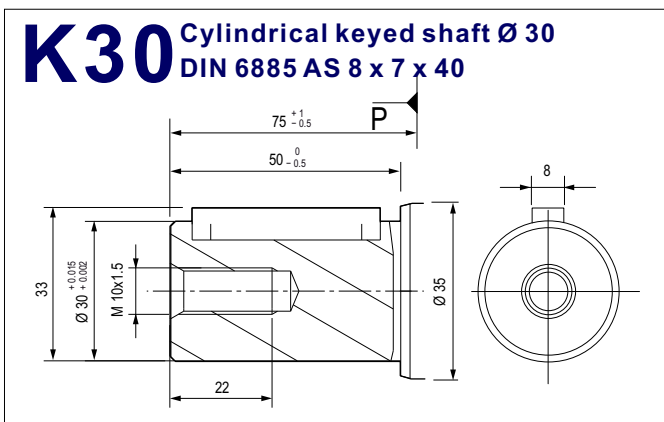
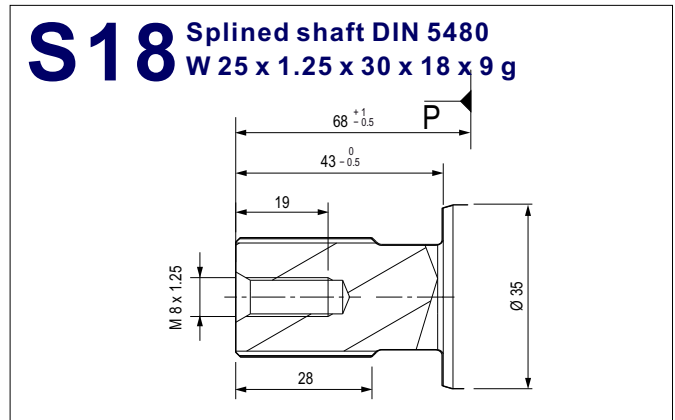
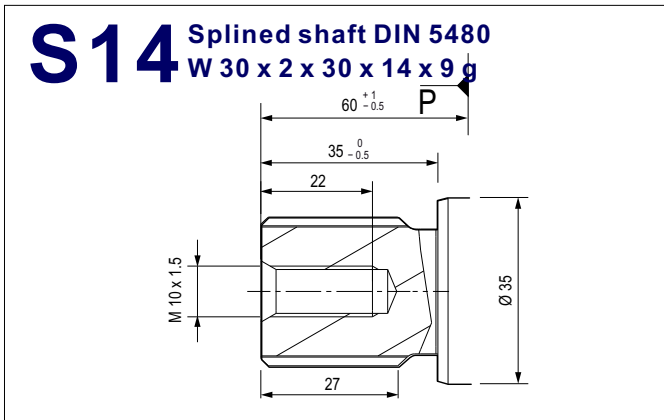
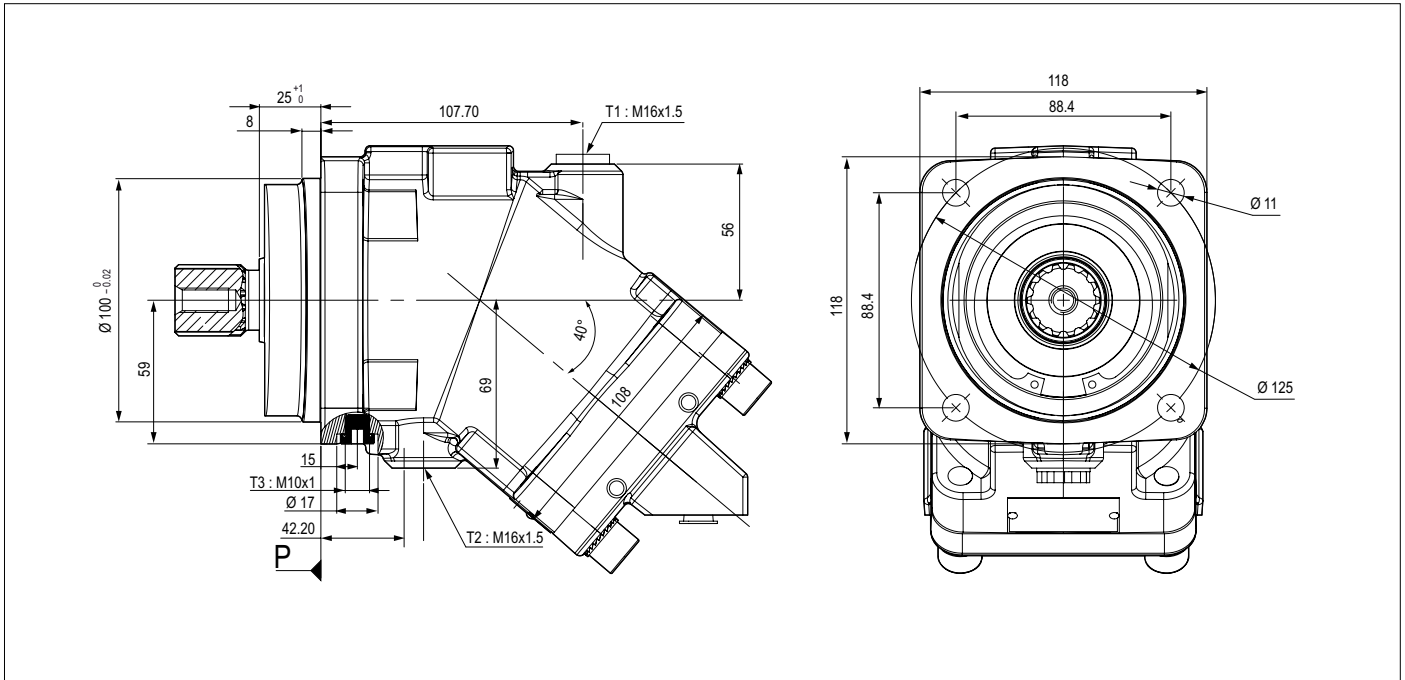
## RD1 Rear flange ports SAE 1/2" 6000 psi



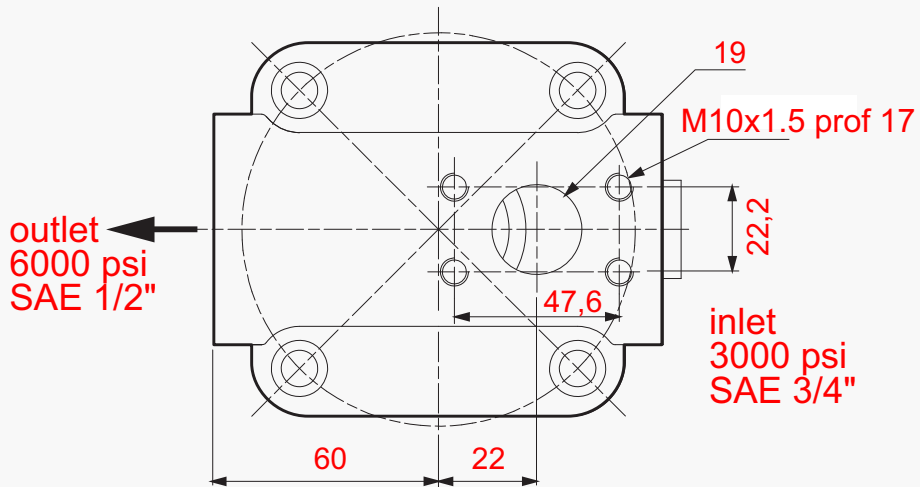
## SD2 Side threaded ports A and B



# A11 - 41 cc (ISO2) Bent Axis Pump

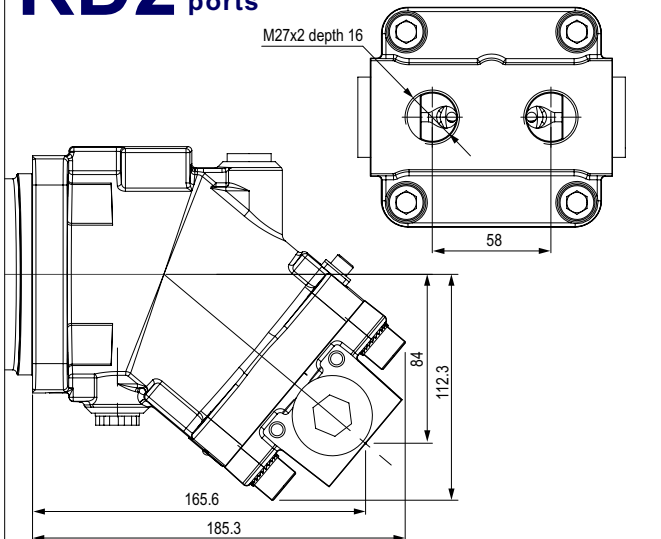


## SLR

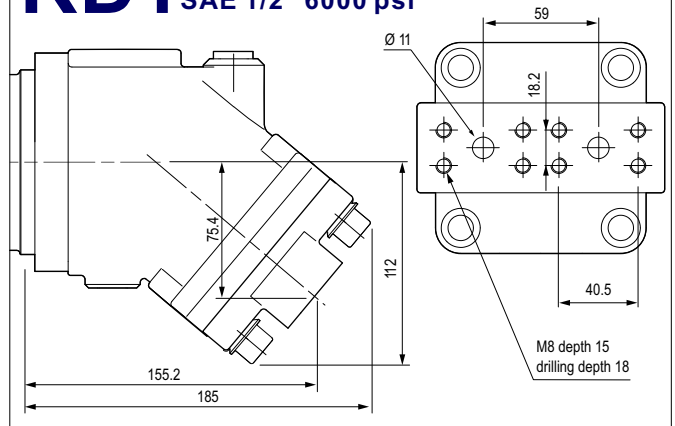


view from G

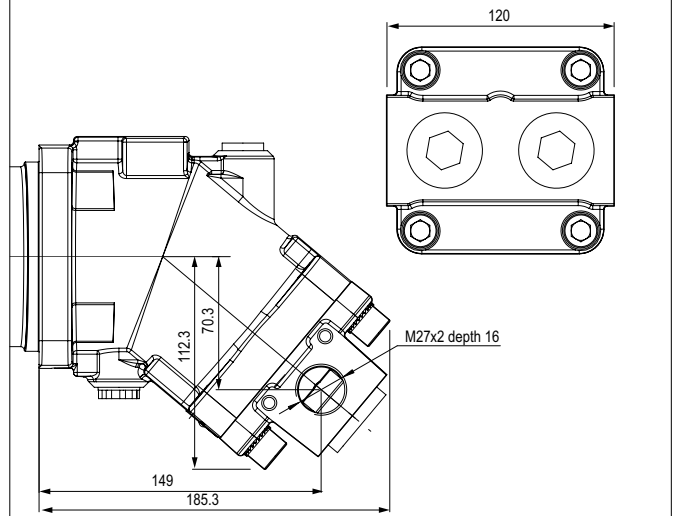
## RD2 Rear threaded ports



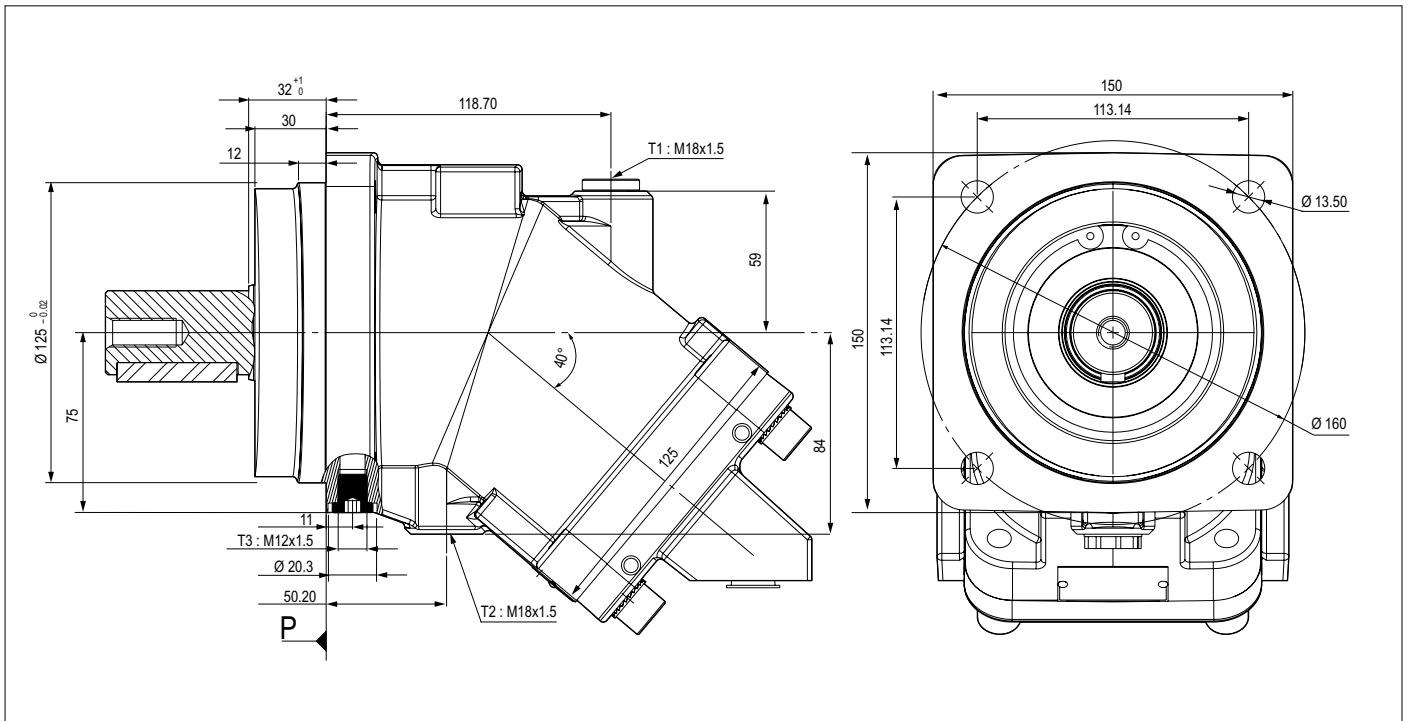
## RD1 Rear flange ports SAE 1/2" 6000 psi



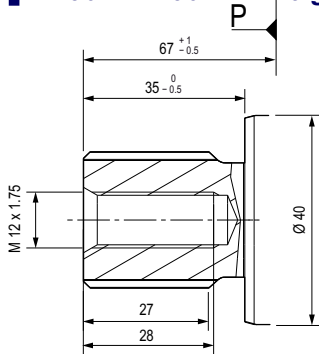
## SD2 Side threaded ports A and B



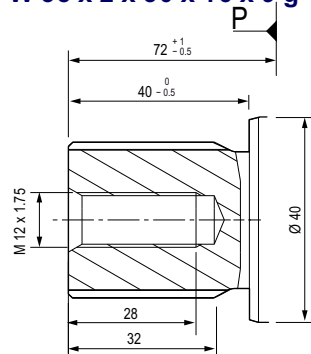
# A11 - 45 cc (ISO2) Bent Axis Pump



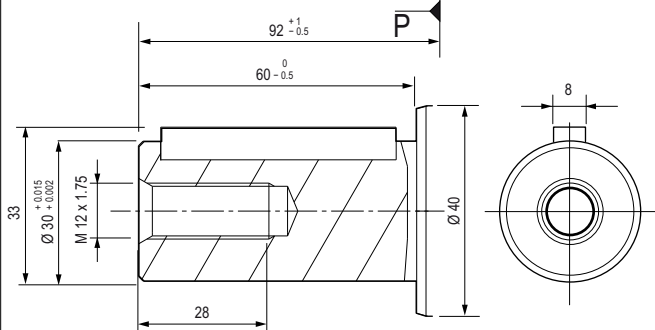
## S14 Splined shaft DIN 5480 W 30 x 2 x 30 x 14 x 9 g



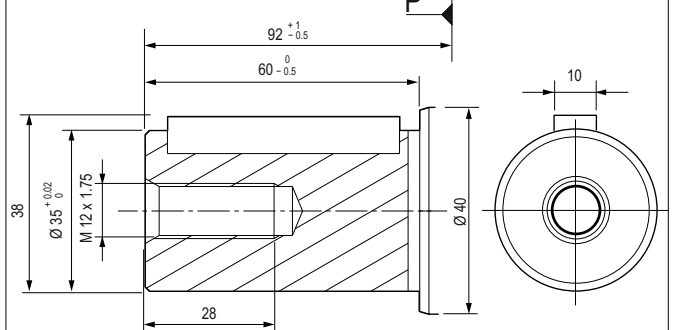
## S16 Splined shaft DIN 5480 W 35 x 2 x 30 x 16 x 9 g



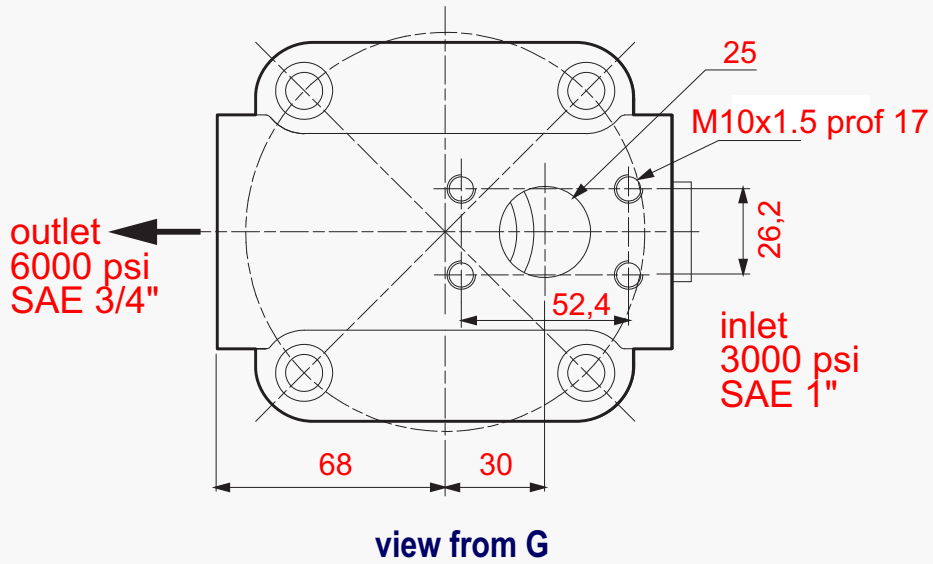
## K30 Cylindrical keyed shaft $\varnothing 30$ DIN 6885 AS 8 x 7 x 40



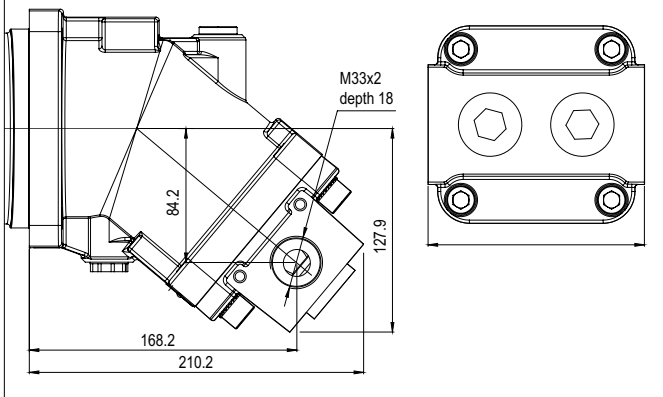
## K35 Cylindrical keyed shaft $\varnothing 35$ DIN 6885 AS 10 x 8 x 50



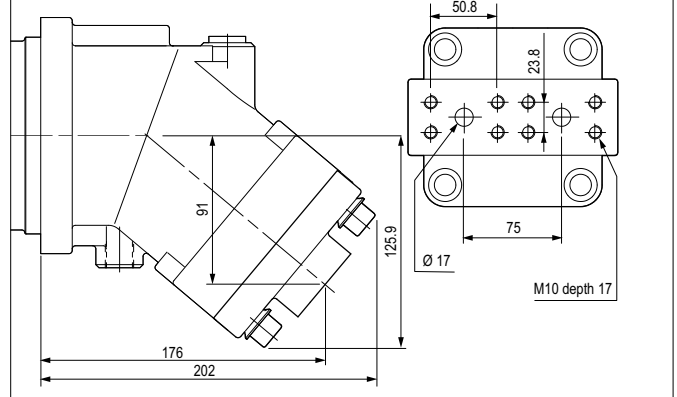
## SLR



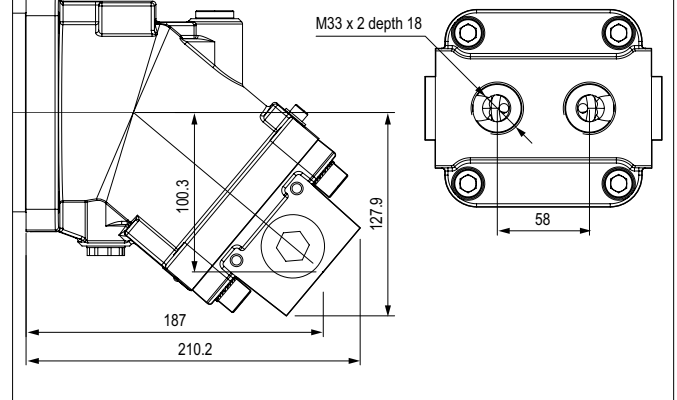
## SD2 Side threaded ports A and B



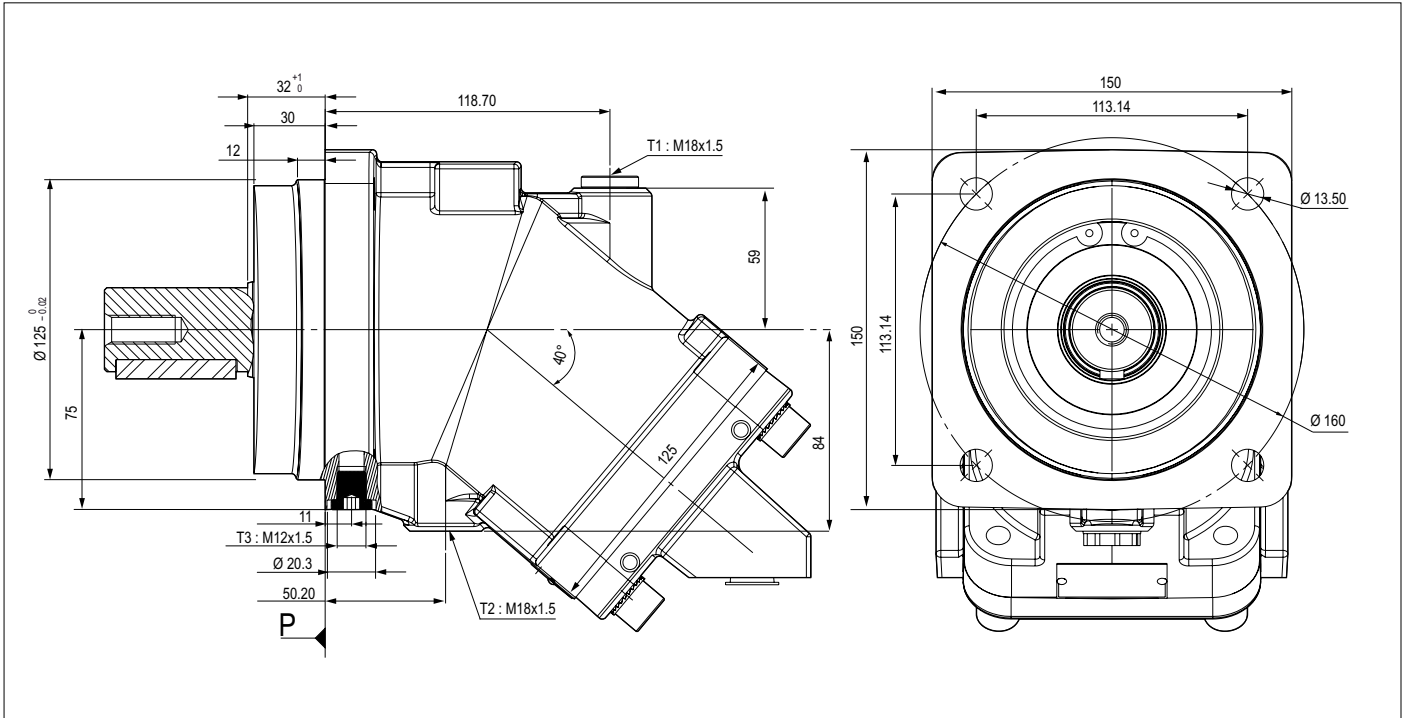
## RD1 SAE flange ports, rear SAE 3/4" 6000 psi



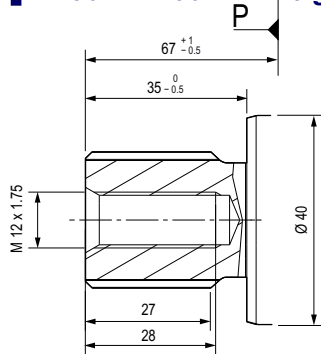
## RD2 Rear threaded ports



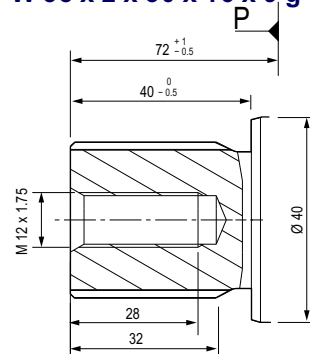
# A11 - 50 cc (ISO2) Bent Axis Pump



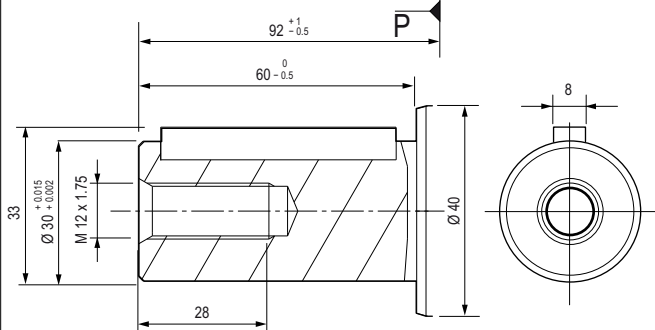
## S14 Splined shaft DIN 5480 W 30 x 2 x 30 x 14 x 9 g



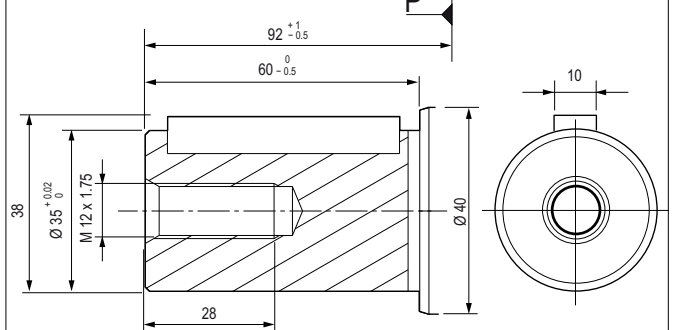
## S16 Splined shaft DIN 5480 W 35 x 2 x 30 x 16 x 9 g



## K30 Cylindrical keyed shaft <math>\varnothing 30</math> DIN 6885 AS 8 x 7 x 40

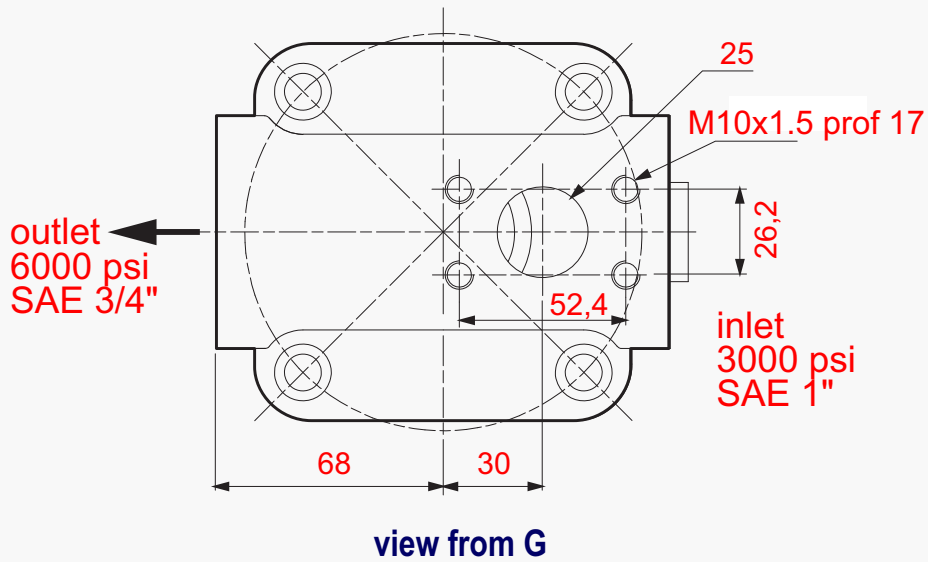


## K35 Cylindrical keyed shaft <math>\varnothing 35</math> DIN 6885 AS 10 x 8 x 50

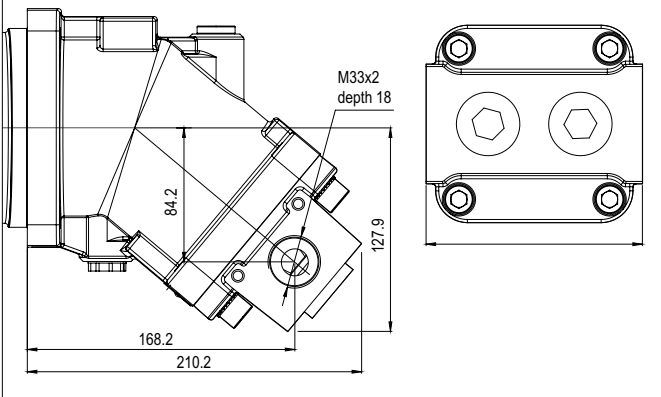




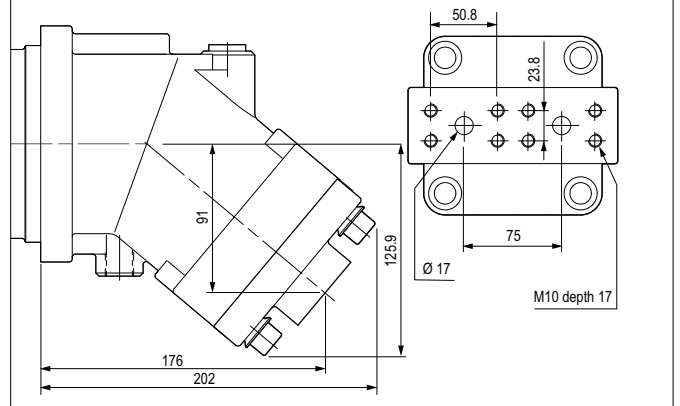
## SLR



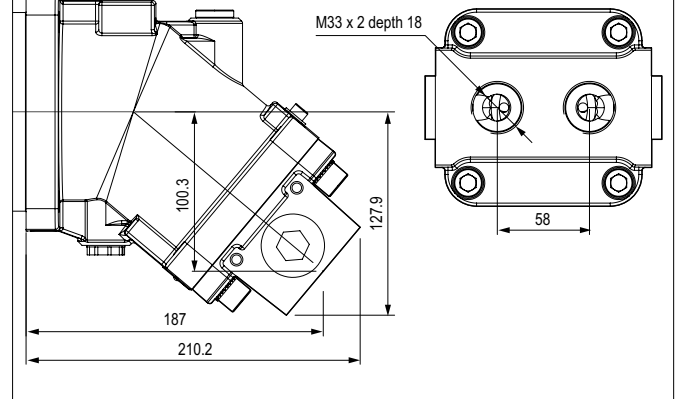
## SD2 Side threaded ports A and B



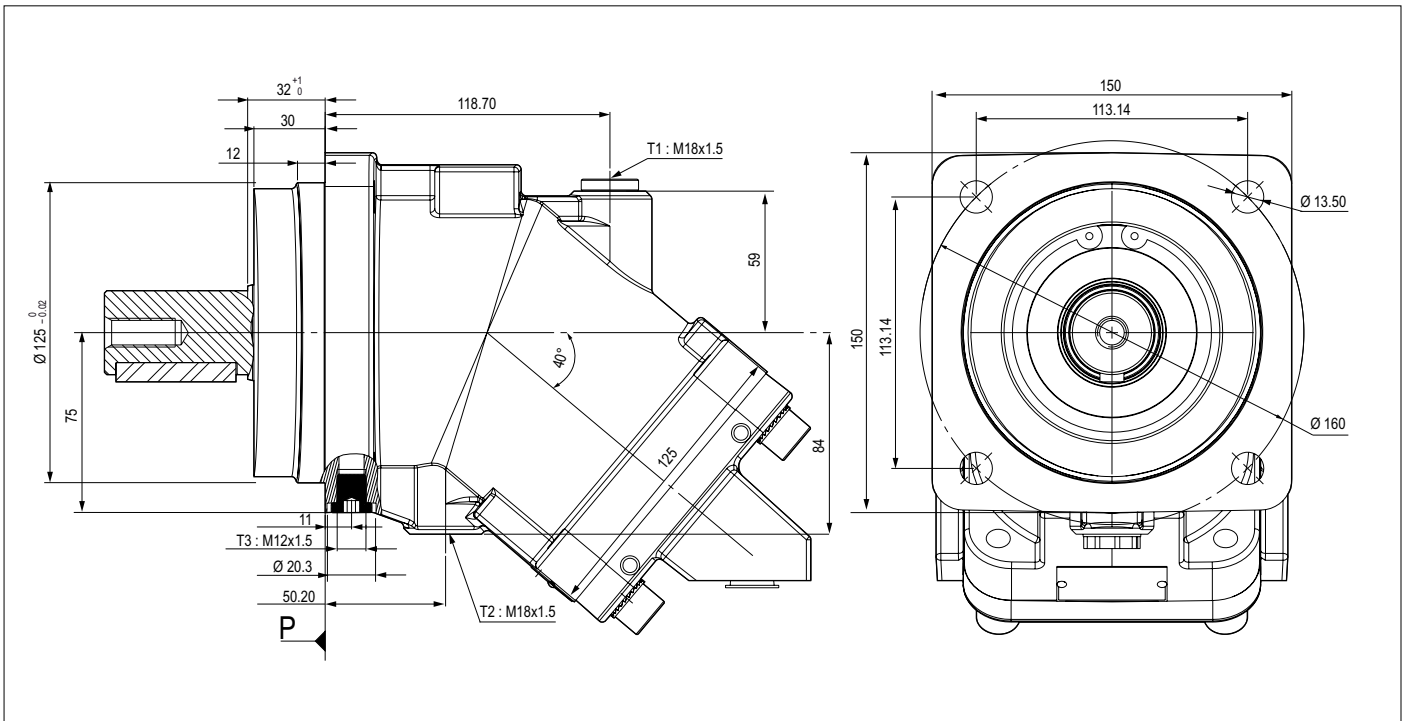
## RD1 SAE flange ports, rear SAE 3/4" 6000 psi



## RD2 Rear threaded ports

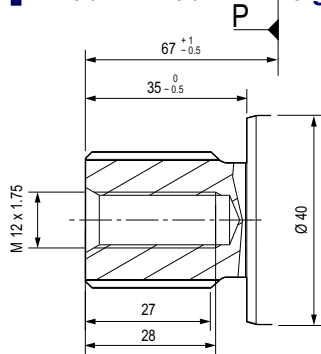


# A11 - 56 cc (ISO2) Bent Axis Pump



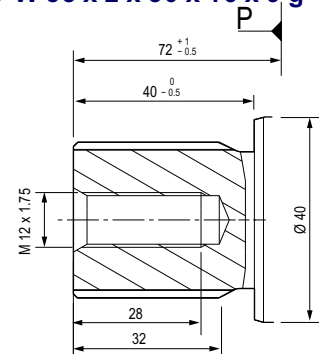
## S14 Splined shaft DIN 5480

W 30 x 2 x 30 x 14 x 9 g



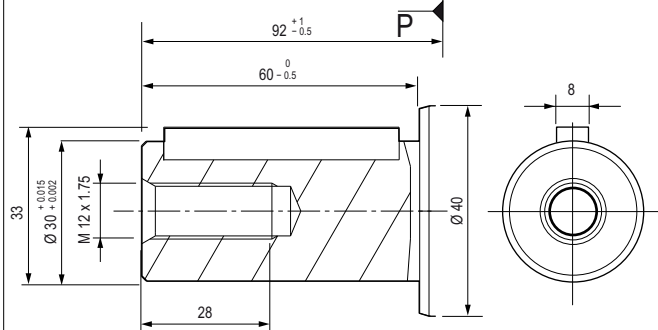
## S16 Splined shaft DIN 5480

W 35 x 2 x 30 x 16 x 9 g



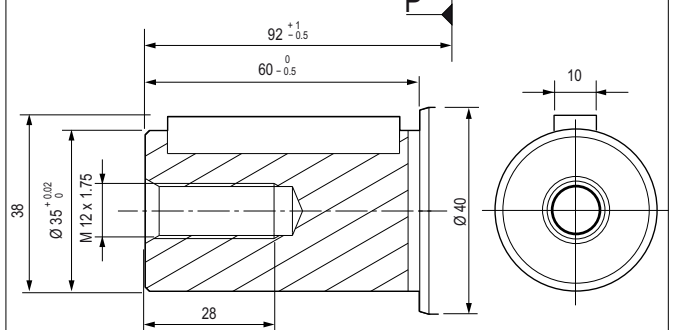
## K30 Cylindrical keyed shaft $\varnothing 30$

DIN 6885 AS 8 x 7 x 40

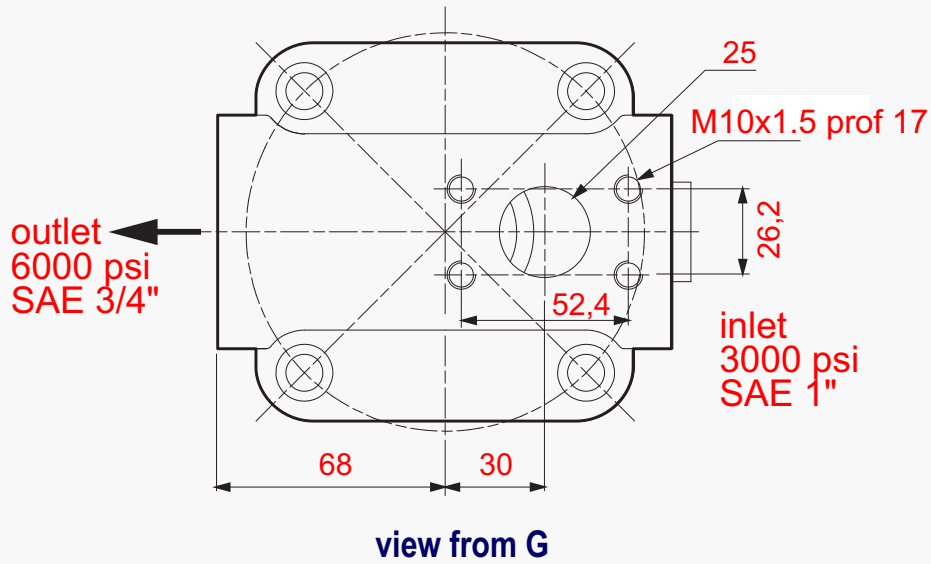


## K35 Cylindrical keyed shaft $\varnothing 35$

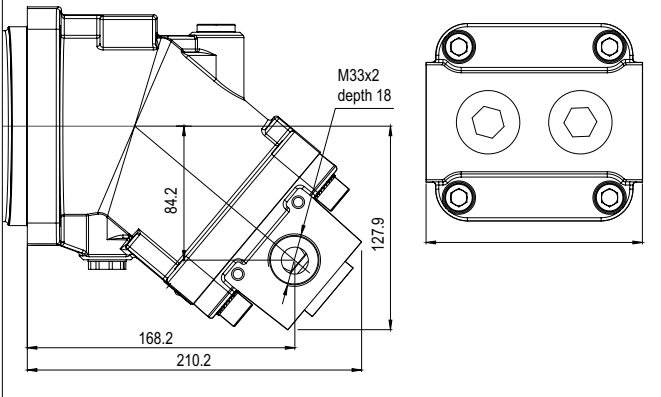
DIN 6885 AS 10 x 8 x 50



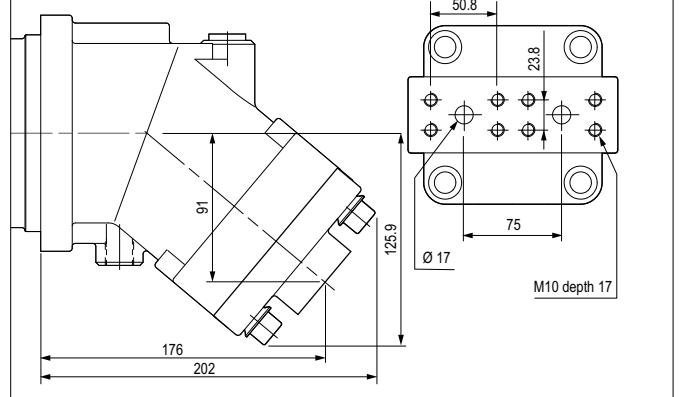
## SLR



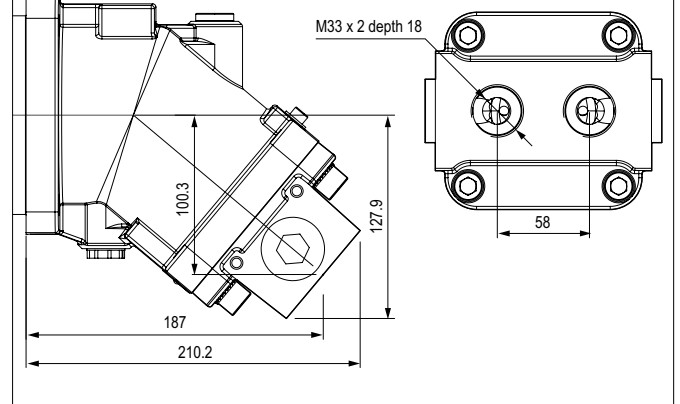
## SD2 Side threaded ports A and B



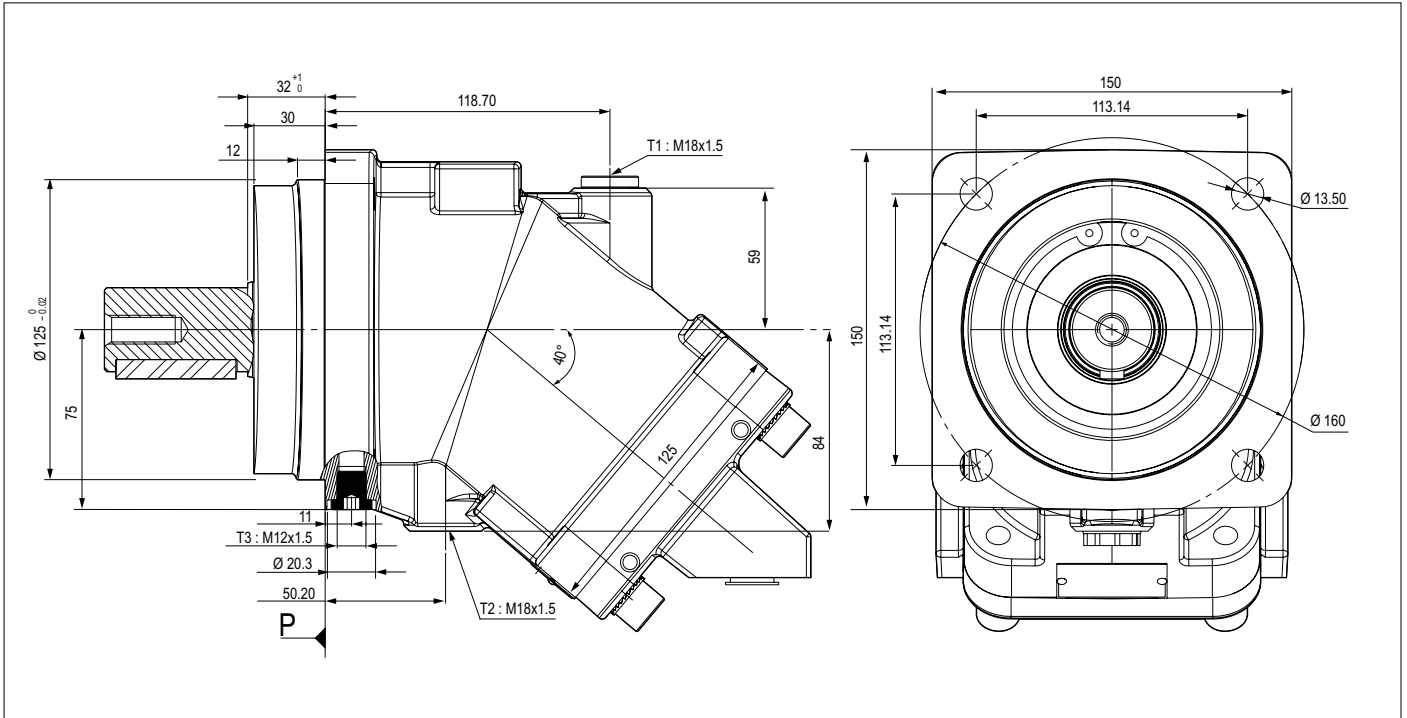
## RD1 SAE flange ports, rear SAE 3/4" 6000 psi



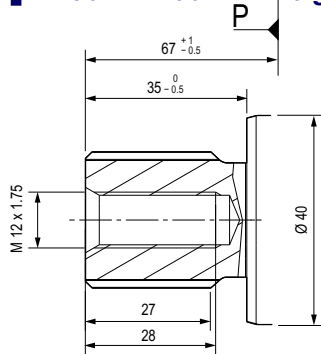
## RD2 Rear threaded ports



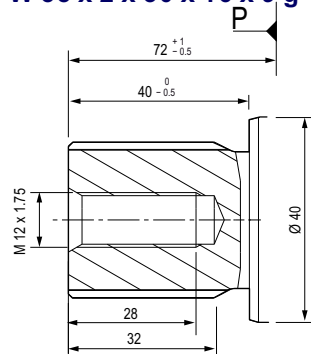
# A11 - 63 cc (ISO2) Bent Axis Pump



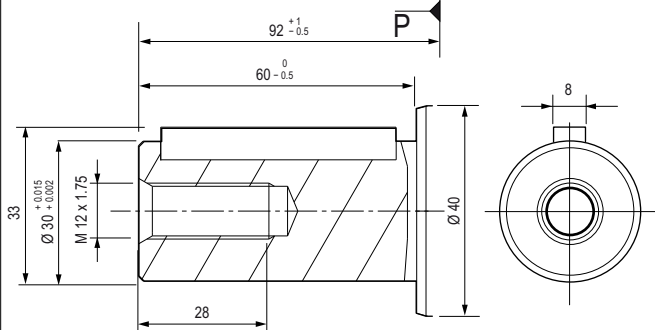
## S14 Splined shaft DIN 5480 W 30 x 2 x 30 x 14 x 9 g



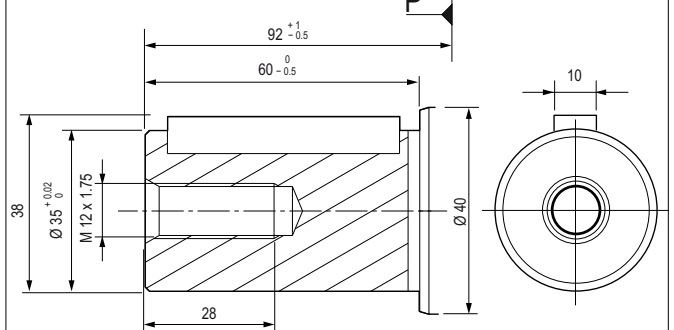
## S16 Splined shaft DIN 5480 W 35 x 2 x 30 x 16 x 9 g



## K30 Cylindrical keyed shaft Ø 30 DIN 6885 AS 8 x 7 x 40

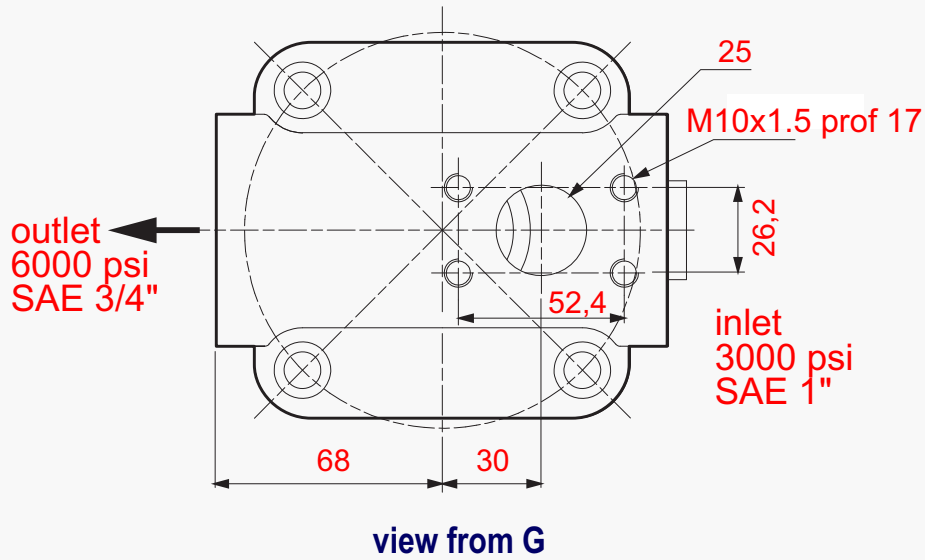


## K35 Cylindrical keyed shaft Ø 35 DIN 6885 AS 10 x 8 x 50

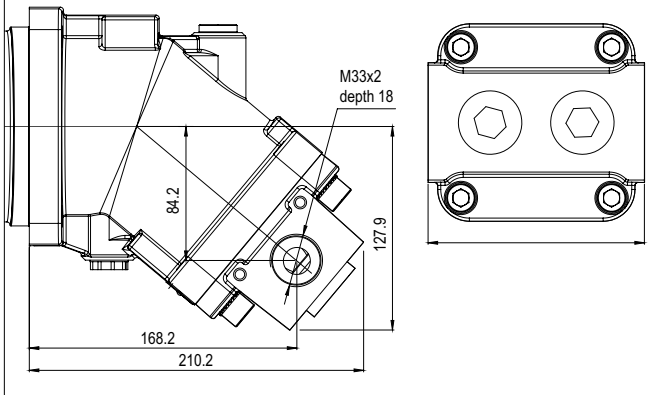


# A11 - 63 cc (ISO2) Bent Axis Pump

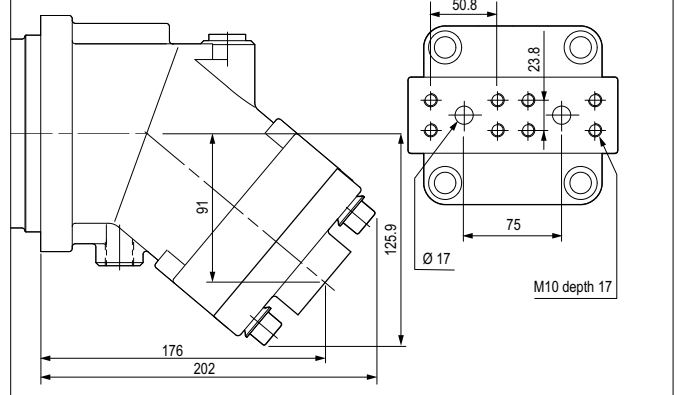
**SLR**



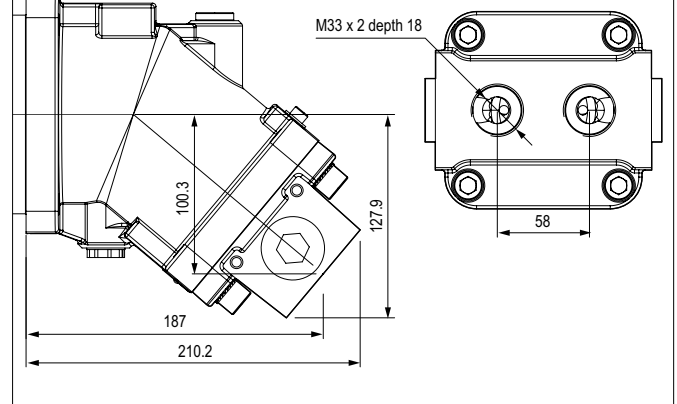
**SD2** Side threaded ports  
A and B



**RD1** SAE flange ports, rear  
SAE 3/4" 6000 psi

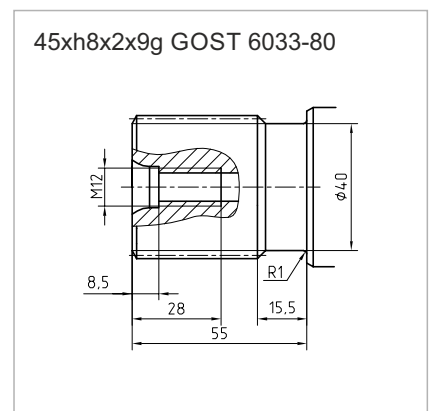
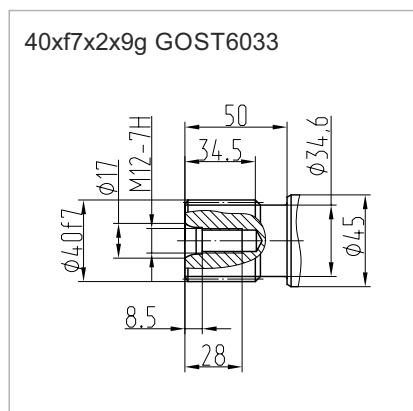
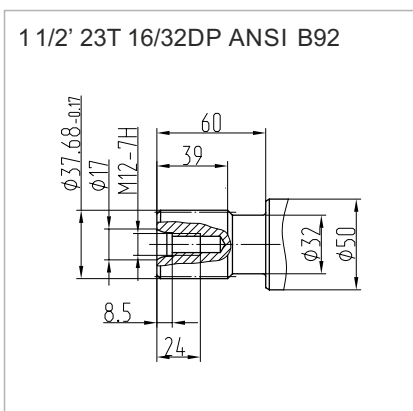
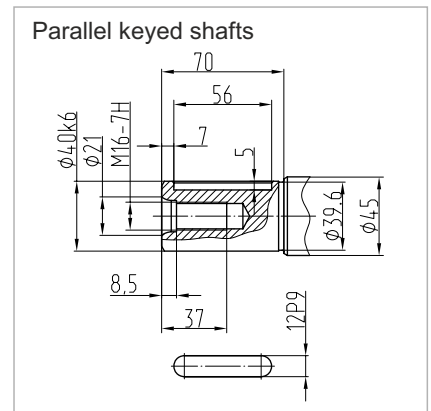
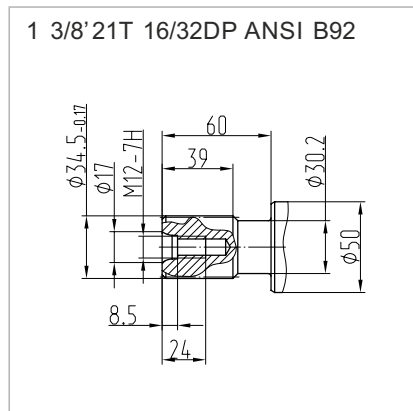
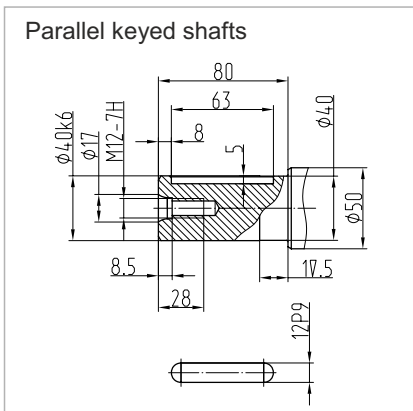
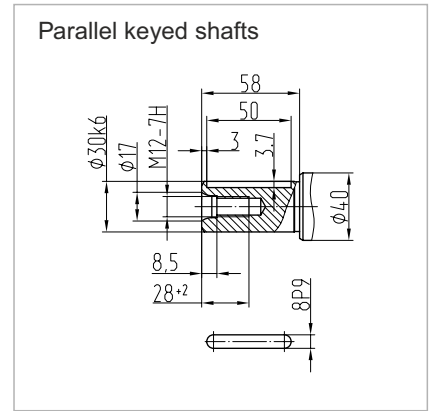
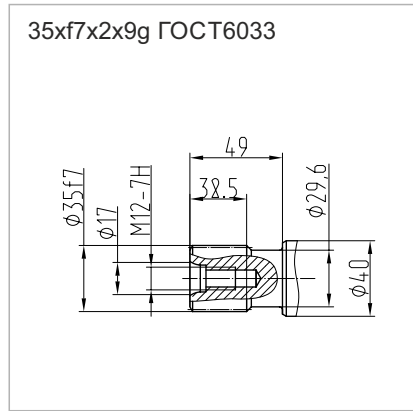
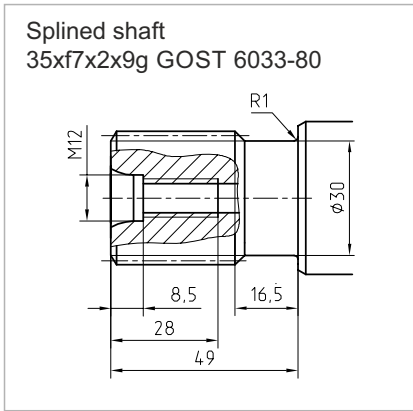


**RD2** Rear threaded ports



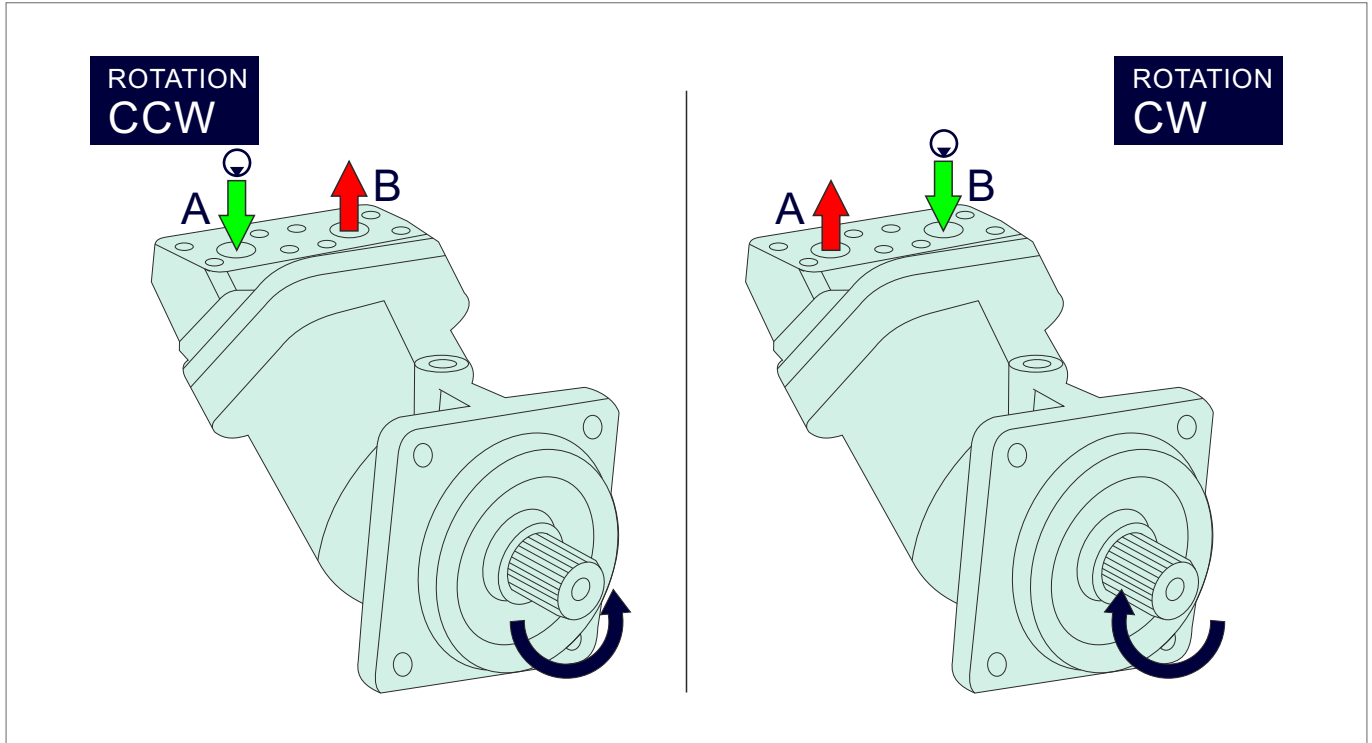
## Special Shaft Drive Options for A11 Pumps

For the Special applications, we produce Special Shaft Drive for the A11 Pumps.  
Details are listed in below.



## Direction of Rotation; Reversible

The Pumps rotate clockwise or counter-clockwise depending on the direction of hydraulic flow entering the Pump.



| Formulas                          |      |   |  |
|-----------------------------------|------|---|--|
| <b>Pump Output Flow</b>           | GPM  | $GPM = (\text{Speed (rpm)} \times \text{disp. (cu. in.)}) / 231$  | $GPM = (n \times d) / 231$   |
| <b>Pump Input Horsepower</b>      | HP   | $HP = GPM \times \text{Pressure (psi)} / 1714 \times \text{Efficiency}$                                 | $HP = (Q \times P) / 1714 \times E$  |
| <b>Pump Efficiency</b>            | E    | Overall Efficiency = Output HP / Input HP   | $E_{\text{Overall}} = \text{HP}_{\text{Out}} / \text{HP}_{\text{In}} \times 100$ |
|                                   |      | Overall Efficiency = Volumetric Eff. $\times$ Mechanical Eff.   | $E_{\text{Overall}} = \text{EffVol.} \times \text{EffMech.}$                     |
| <b>Pump Volumetric Efficiency</b> | E    | Volumetric Efficiency = Actual Flow Rate Output (GPM) / Theoretical Flow Rate Output (GPM) $\times$ 100 | $\text{EffVol.} = \text{Q}_{\text{Act.}} / \text{Q}_{\text{Theo.}} \times 100$   |
| <b>Pump Mechanical Efficiency</b> | E    | Mechanical Efficiency = Theoretical Torque to Drive / Actual Torque to Drive $\times$ 100               | $\text{EffMech} = \text{T}_{\text{Theo.}} / \text{T}_{\text{Act.}} \times 100$   |
| <b>Pump Displacement</b>          | CIPR | $\text{Dsplcmnt (In.}^3 \text{ / rev.)} = \text{Flow Rate (GPM)} \times 231 / \text{Pump RPM}$          | $\text{CIPR} = \text{GPM} \times 231 / \text{RPM}$                               |
| <b>Pump Torque</b>                | T    | Torque = Horsepower $\times$ 63025 / RPM  | $T = 63025 \times \text{HP} / \text{RPM}$  |
|                                   |      | Torque = Pressure (PSIG) $\times$ Pump Displacement (CIPR) / 2 $\pi$                                    | $T = P \times \text{CIPR} / 6.28$  |

**Horsepower for driving a pump** : For every 1 hp of drive, the equivalent of 1 gpm @ 1500 psi can be produced.

**Horsepower for idling a pump** : To idle a pump when it is unloaded will require about 5% of it's full rated power

**Wattage for heating hydraulic oil** : Each watt will raise the temperature of 1 gallon of oil by 1° F. per hour.

**Flow velocity in hydraulic lines** : Pump suction lines 2 to 4 feet per second, pressure lines up to 500 psi - 10 to 15 ft./sec., pressure lines 500 to 3000 psi - 15 / 20 ft./sec.; all oil lines in air-over-oil systems; 4 ft./sec.

## Installation & Assemble Informations for Bent Axis Pumps

### POSITION

ISO2 Flange Bent Axis Pumps can be operate any position.

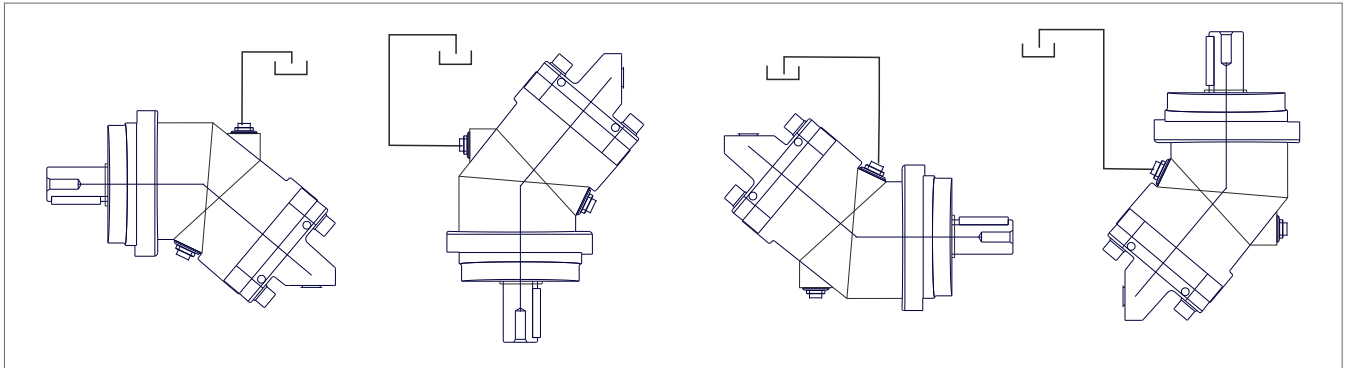
### DIRECTION OF ROTATION

ISO2 Flange Bent Axis Pumps can be operate in both directions of rotation.

Before of Installation operation, the Pump must be filled with hydraulic fluid and air bled.

### INSTALLATION POSITION

See following examples.

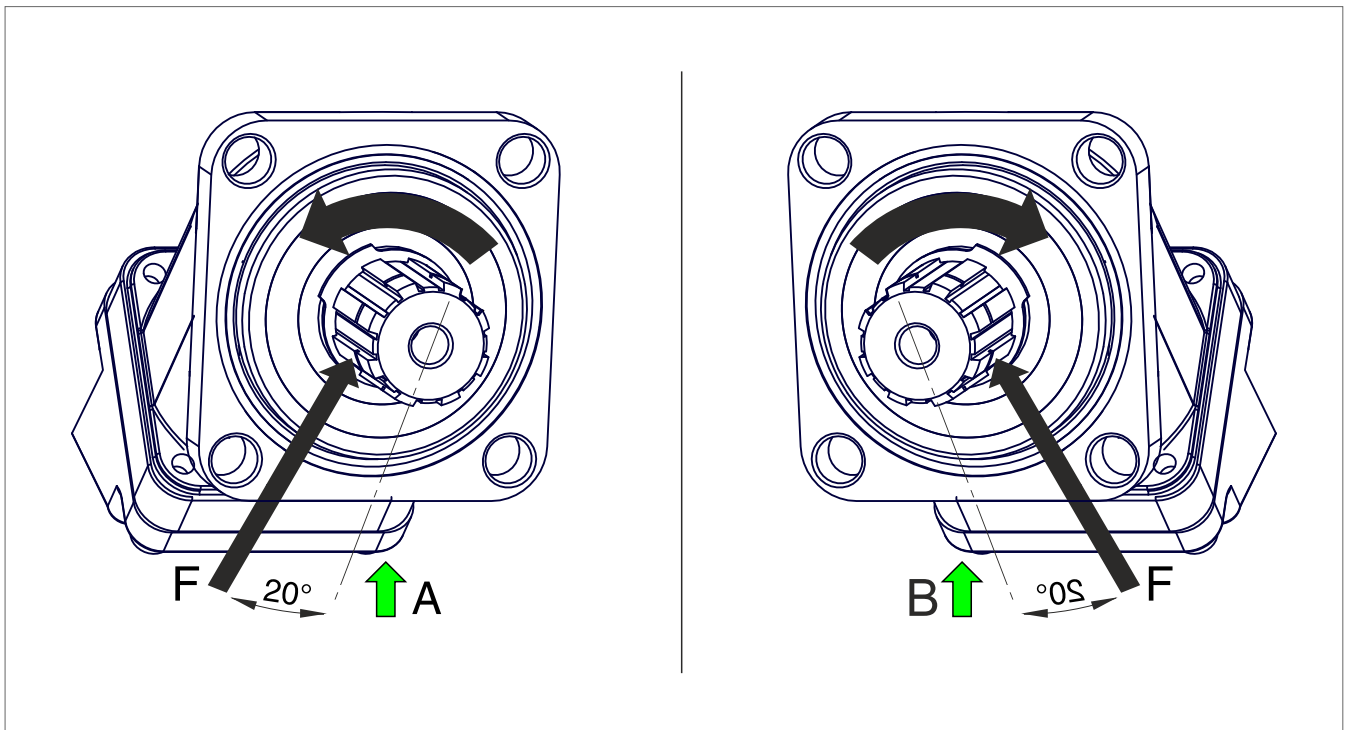


### HYDRAULIC FLUID

Recommended ;

Generally : between 15 and 200 cSt.

Maximum : between 5 and 1600 cSt.



### FOR USE;

Available via e-mail on request or each Pump is supplied via Starting datasheet.



## Formulas, Calculations, Installation Guide

### Quick Calculation

Flow rate

$$Q = \frac{V_s \cdot n}{1000 \eta_v} \text{ (lpm)}$$

Torque

$$M = \frac{V_s \cdot \Delta p \cdot \eta_{mh}}{63} \text{ (Nm)}$$

Power

$$P = \frac{2\pi \cdot M \cdot n}{60000} = \frac{M \cdot n}{9549} = \frac{Q \cdot \Delta p \cdot \eta_t}{600} \text{ (kw)}$$

Speed

$$n = \frac{1000 \cdot Q \cdot \eta_v}{V_s} \text{ (lpm)}$$

- $V_s$  = Displacement (ccm/rev.)  
 $\Delta p$  = Diff. pressure (bar)  
 $n$  = Speed (rpm)  
 $Q$  = Flow (lpm)  
 $\eta_v$  = Volumetric efficiency  
 $\eta_{mh}$  = Mechanical-hydraulic efficiency  
 $\eta_t$  = Total efficiency ( $\eta_t = \eta_v \times \eta_{mh}$ )

New frame sizes to meet market requirements.

Optional by-pass valve.

For use in mobile & industrial and stationary applications areas.

The pump drive shaft bearings are designed to give the service life expected in these areas of operation. Interchangeable with other bent axis pumps & Pumps

40° bent axis design giving high power, small overall dimensions, optimum efficiency and economic design. Flange and shaft designed for direct mounting on truck gearbox PTO's. The fixed displacement bent axis pumps generates a hydraulic fluid flow. It is designed for use in trucks, commercial vehicles and all stationary hydraulic applications. The pump is a fixed pump with rotary group in bent-axis design open circuits. Flow is proportional to drive speed and displacement.

For axial piston units with bent-axis design, the Pistons are arranged diagonally with respect to the drive shaft. The pump motor covers the whole displacement range 5 to 130 cm<sup>3</sup>/rev. The pump has been developed with modern styling and design to satisfy market demand as to designed new generation plate and pistons with give high flow performance, high pressures with high efficiency and very small dimensions.

The pump is available both to DIN and SAE world standards and can be mounted either directly at the gear box or via a drive shaft. If necessary it can also be augmented with a by-pass valve.

Other brand bent axis pumps compatible and interchangeable with bent axis pumps motors. Refer to the data sheet and order confirmation for the technical data, operating conditions and operating limits of the bent axis piston pumps.

## Complete Product Range

### Bent Axis Piston Motors

A9MD (DIN) Bent Axis Motors  
A9MO (ISO) Bent Axis Motors  
A9MS (SAE) Bent Axis Motors  
A9ML (SAE2) Bent Axis Motors  
A9MF (Fixed Plugin) Bent Axis Motors  
A10M (HYBRID) Bent Axis Motors  
A7GM Hydraulic Gear Motors  
A7GMT Tandem Hydraulic Gear Motors

### Bent Axis Piston Pumps

A8P (Aluminum) Bent Axis Pumps  
A8PD (DIN) Bent Axis Pumps  
A8PO (ISO) Bent Axis Pumps  
A8PS (SAE) Bent Axis Pumps  
A8PF (Fixed Plugin) Bent Axis Pumps  
A10 (HYBRID) Bent Axis Pumps  
A11 (ISO2) Bent Axis Pumps  
A11 (SAE2) Bent Axis Pumps

### Variable Displacement Pumps

A12V Variable Displacement Piston Pumps

### Dual Flow Piston Pumps

A8PL (DIN) Dual Flow Pumps

### Axial Piston & Gear Pumps

A4PP Axial Hydraulic Piston Pumps  
A6HP High Pressure Piston Pumps  
A7GP Hydraulic Gear Pumps  
A7GPT Tandem Hydraulic Gear Pumps

### Valve (ByPass) (Flushing) (Cavitation)

Circulation Valve  
ByPass Valve  
Anti-Cavitation Valve  
Flushing Valve  
LS Valve  
AntiShock Valve  
Speed Sensor

### Hydraulic Spare Parts

Suction Fittings  
Couplars  
Adapters  
Flanges  
Power Take Off  
Monoblock Valve  
Section Valve

## Hydraulic Pumps, Motors

Bent Axis Hydraulic Piston Motors, Bent Axis Hydraulic Piston Pumps, Piston Pumps, Variable Displacement Piston Pumps, Variable Displacement Piston Motors, Axial Piston Pumps, High Pressure Piston Pumps, Gear Pumps, Gear Motors, Hydraulic Valve.

[www.hydrogold.com.tr](http://www.hydrogold.com.tr)

### Address;

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